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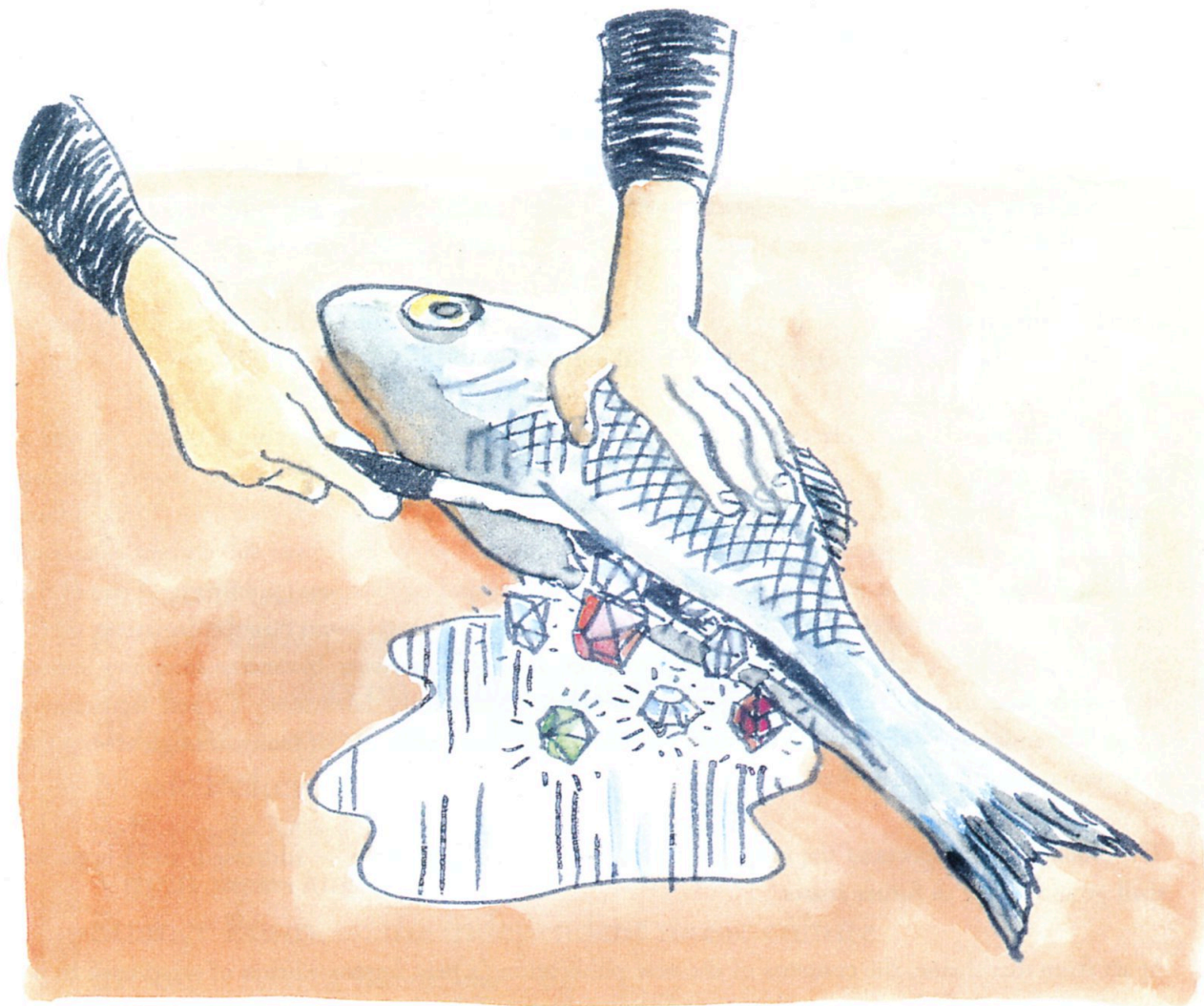
MUSIC UNDER NEW TECHNOLOGY

ReR / RECOMMENDED SOURCEBOOK 0401

P. B.

editorial

SOUND RECORDING changed the face of music forever by the simple act of making performance and composition reversible: suddenly a performance, rather than being the end of a process - and always lost - became, potentially, the raw material of new composition. Abstract instruction, indeterminate as to interpretation and performance (the written score) was no longer the only medium for complex sound organisation: now concrete manipulation of actual sound became possible, and the recording itself was the only and finished version of a work.

Sampling is no more than a recording system that gives instant access to any recorded sound at the touch of a button, key or pad. Digital sampling (Davis) when linked to computing power, allows the user to change the pitch, duration, dynamic shape or harmonic content of any sample, or simply to import it into another context unchanged. No need to generate any new or played sound; one can simply assemble and transmute exisiting recordings, including CDs, LPs and other readymades. Thus a new kind of sound construction is born, analogous to that of collage and photomontage in the visual arts, and a new sound constructor, not necessarily able to play any instrument nor musically literate, but able rather to work empirically, by experiment and listening alone.

A wonderful instrument? Certainly one ubiquitous in popular and electronic music today. So why a 'problem'? Simply because it turns the whole inherited music paradigm upside down, making production consumption, finished work raw material and somebody else's work your own (Drake), thus challenging the base concepts of originality, individuality and property rights, the current pillars of established music practice. And property rights means money and big business (publishing is one of the most profitable sectors of the music industry today). The legal and moral issues raised (plagiarism, theft) have already caused much fluttering in the dovecotes, as well as lawsuits, byzantine sampling licence agreements and the destruction of important aesthetic (Mandatory Meltdown 1) and legitimately critical (Mandatory Meltdown 2) works. Our examples here are only two of many, though among the most eloquent, from where we stand.

The philosophical aspects of the new technology have still adequately to be addressed, and I hope we shall go into these in future issues.

Apart from this theme, the contents of the new publication (a new format edition of what used to be the ReR Quarterly follow our usual pattern: keeping abreast of developments in our field, and collecting and commissioning new musical and theoretical work. We adhere still to our policy of not adding to the mass of interviews and reviews adequatley provided elsewhere.

Lastly, the Quarterly CDs and these accompanying sourcebooks remain a non-profit service. We have no advertising revenue or subsidy money. Our contributors are paid, though nominally, as a matter of principle and production costs for this quality, which we think you'd prefer, are extremely high. This explains the cover price (and why it is cheaper to subscribe or buy from us direct).

In memoriam Alexander Zhilin.

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a history of SAMPLING

Hugh Davies

Most people are unaware that our current transition from analogue to digital technology is the second stage in a development that began around the middle of the last century, culminating in the mid 1870s. Up to then all communications had been digital[1] - but not necessary binary - such as the electric telegraph and Morse Code, as well as much older non-electrical systems like semaphore and North American Indian smoke signals. It was the virtualy simultaneous invention of the telephone (Alexander Graham Bell) and the phonograph (Thomas Alva Edison) that ushered in a century of analogue technology.

The principal technique used in our second digital era was devised by Alec Reeves in 1937-38 under the name pulse-code modulation (PCM), in which error-correction was also foreseen. Reeves, a researcher in telephony for ITT (later STC) in Paris, arrived at PCM after experimenting with pulse-amplitude, pulse- width and pulse-time (or pulse-position) modulation (see Fig.1). It is hard for us now to imagine the difficulties that were involved in devising such a new digital system in an analogue world, and indeed it wasn't until semiconductors[2] came along that this approach really became practical. The first simple PCM system, for radio telephony, was operational by 1943; later on Reeves' work was also developed elsewhere, including by a team at Bell Labs headed by Harold Black (1947-48).

In recent years hi-fi and synthesiser manufacturers, especially in Japan, have often adopted the term PCM - simply to mean digital - as jargon to impress the public. At the end of the 1980s, however, other digital methods of solving some of the problems inherent in high quality PCM began to be explored. In the diagram *pulse amplitude* is shown as a vertical measurement, in which information is encoded as the relative height of each successive regular pulse, while the remaining possibilities are horizontal, such as a string of coded numerical values for PCM, and the relative widths (lengths) of otherwise identical pulses and their density (the spacing between them). Both of the latter were also explored by Reeves; the former is used today in the form of the very similar techniques of pulse-width modulation (PWM: Yamaha, Technics, &c), pulse-length modulation (PLM; Sony) and pulse-edge modulation (PEM; JVC), while the latter is the basis of Philips' pulse-density modulation (PDM).

Since the late 1970s the term "sampling" has been applied in music to the method by which special musical instruments or apparatus digitally "record" external sounds for subsequent resynthesis. But the term was originally used to describe how in PCM the waveform of any sound can be analysed and/or synthesised simply by measuring its amplitude or loudness level at each of a sequence of vertical "slices" taken many thousand times per second (see Fig.2). Because, for musical purposes, these slices are normally made at a frequency of between 40,000 and 50,000 times per second (in other words more than twice the highest audible frequencies), every nuance of even the most complex waveforms can be captured.
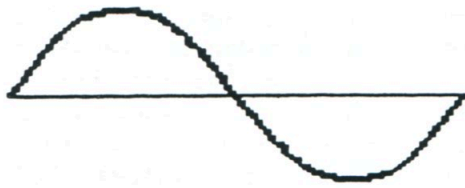
Edison's cylinder phonograph was the first system ever devised for both storing and replaying any chosen sound or sequence of sounds, involving a special storage medium on which the recording could be permanently retained. With the new analogue techniques that they had introduced into a digital world it is hardly surprising that Edison and Bell did not forsee how subtantially their inventions would affect the future of the whole planet, and indeed for some time their significance went unrecognised. In 1878, several months after his invention of the phonograph, among several possible applications for it described by Edison in a patent (but one that does not appear to have been constructed) was the earliest form of Speak-'n'-Spell, to teach the relationship between each letter of the alphabet and its sound: a set of typewriter keys, each labelled with a single letter, activated the playback of individual sections of a long cylinder that contained the spoken form of the letter.

In the subsequent century many other recording systems have been developed, both analogue and - more recently - digital, all of which have been proposed or utilised as the basis for musical instruments and comparable systems, whereby, cuckoo-like, the instrument has no voice of its own, but can be said to "speak with the voice of another instrument". For the lack of any better word, "sampling" is used in this survey to describe all of these methods of storing and replaying sounds, analogue as well as digital. Indeed recent terminoglogy describing digital systems can not only usefully be applied to analogue ones, but also gives us greater insight into the ideas and ingenuity behind them.

Early Imitations of Speech and Other Musical Instruments

The concept of one instrument that sounds like another is not new. Already in Roman times one of the oldest instruments, the hydraulic

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1. Sound is perceived in an analogue way, as continuous events in time. But it is possible to create sounds not only in this way but also digitally, by means of sequences of short impulses that are much too fast to hear individually; this is particularly suited to computers and computer-based equipment, which use a binary system in which all information is coded "yes" or "no", "on" or "off".
2. Semiconductors are the much more compact electronic devices, such as transistors and integrated circuits, that replaced valves.

1(a) Simple analogue signal (sine wave)

1 (c) Pulse-width modulation
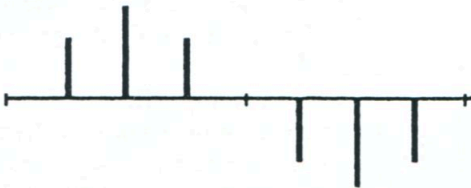
1(b) Pulse-amplitude modulation

1(d) Pulse-time (position) modulation

1(e) Pulse-code modulation (PCM)

Fig.1 (a-e)

1(a) simple analogue signal (sine wave) Four different digital versions of the same signal; for the sake of clarity these diagrams are coded with only three bits (normally fourteen, sixteen or more bits are used), and show only a small proportion of the hundreds or thousands of sample "slices":

1(b) pulse-amplitude modulation
1(c) pulse-width modulation
1(d) pulse-time (position) modulation
1(e) pulse-code modulation (PCM)

A sequence of measurements of an analogue signal requires values both for time (horizontal) and for amplitude (vertical). All measurements of a digital signal are related to a constant, very short time unit, so that only one value is needed: these diagrams show the signal (consisting of values 467642124 in the 3-bit range, which uses only the numbers from 0 to 7) depicted by pulse **amplitude, width, time** displacement, and, the simplest, its **coded** binary numerical value.

Fig.2
A more complex waveform, showing how its outline can be translated into sampled "slices"; the closer these are together (in other words, with a higher sampling **frequency**), the more accurately the sound will be represented. In this example the highest point would not be sampled correctly, because it occurs between two slices in a manner that a computer could not predict.

Fig. 2

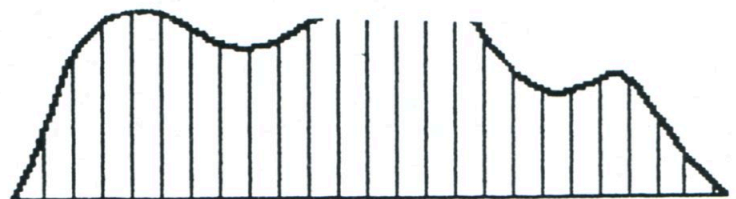pipe organ, was expanded by adding separately controllable parallel sets of pipes ("ranks"), which were later to be identified by the names of other instruments whose timbres they resembled most closely, leading to the large multitimbral instruments that were installed in many mediaeval European cathedrals. By the 16th century birdsong imitations and percussive sound effects were occasionally incorporated. From around 1800 a number of large mechanical organs known as orchestrions specifically imitated all the instruments of the symphony orchestra or military band with many ranks of pipes and free reeds in addition to built-in percussion instruments.

There has also been a long history of speech synthesis, in which the human voice is artificially recreated - for a variety of motives. This goes back to very early myths and legends, especially from China, such as a bamboo spike fixed below a sliding temple door that ran in a groove in the floor, producing sounds "Please shut the door" and, in reverse, "Thank you", as well as the speaking heads attributed to several leading European religious figures in the 13th century, such as Albertus Magnus and Roger Bacon. Serious exploration with bellows-powered machines began in the second half of the 18th century, from simple talking dolls ("Mama") to elaborate keyboard-controlled systems in which mechanical equivalents of the human throat, mouth and larynx were manipulated; one such machine (in which the air was mouth-blown) was constructed in 1863 by Bell at the age of sixteen, only thirteen years before he invented the telephone. A pioneering 20th century machine was the keyboard-operated Voder (Voice-Operation DEmonstratoR), devised by Homer Dudley and others at Bell Telephone Laboratories in 1937, a year after they had invented the vocoder. Simple apparatus for imitating animal sounds from the late 18th century onwards featured string-pulled miniature bellows (very similar to today's hand-held cardboard tubs, produced in the Far

East, which operate the bellows when turned upside down); mouth-blown bird calls and whistles are, of course, much more ancient.

Finally, the very earliest, albeit unwitting, form of sampling. In the late 1960s Dr Richard Woodbridge experimented with retrieving sounds (but did not succeed in his real aim, actual speech) that were "recorded" from the immediate environment in the decoration of some old pots, where a pointed stick was used to make fine grooves while the potter's wheel was turning; these sounds obviously included the noises made by the wheel itself. A decade later Woodbridge's idea was explored, apparently independently, by Dr Peter Lewin in Toronto. If any such ancient sounds are to be discovered, today's sophisticated laser-beam technology (as used in compact disc players) with computer-enhancement should prove more successful than the experiments carried out by these two men.

Out of all these ideas, it is only in decorated pots and the myth of the Chinese temple door, however, that sounds could have been recorded. In the other methods, the recreation of a particular sound quality required a comparable method of generating sound vibrations, often, as with organ pipes and reeds, using a completely different principle of sound production. From the phonograph onwards, this restriction has no longer existed. Among Edison's earliest practical applications of the phonograph were, once again, talking dolls.

Analogue Sampling: Electromagnetic

In 1887 Emile Berliner was the first person to extend the idea of Edison's cylinder phonograph successfully, as the disc gramophone, In the following decade Valdemar Poulsen developed the Telegraphone, the first magnetic recorder, using magnetised wire. The earliest proposals for basing a musical instrument on a sound recording system were several keyboard phonographs using

multiple prerecorded cylinders or discs, including patent applications made by Michael Weinmeister, Austria, in 1906, Antoine Chatard, France, in 1907 and Demetrio Maggiora with Matthew Sinclair, Britain, in 1908), while an electromagnetic system by Melvin L.Severy (the inventor of the Choralcelo[3]), describing the possibility of inscribing recordings of musical notes onto rotating magnetic discs, formed part of his US patent 1218324 (applied for in 1907, but only finally granted in 1917).

It was not until after World War I that other inventors patented, and in some cases constructed, musical instruments that were based on one or other of the then currently available sound recording techniques. In parallel with the development of the magnetic recorder as a dictating machine during the 1920s, early patents were granted to K.Fiala (Germany, 1920), R.Michel (Germany, 1925), A.Douilhet (France, 1925) and, especially, Charles-Emile Hugoniot (France, 1921-22) for the instruments in which electromagnetic wires, discs or cylinders were the recording medium. Around 1930 A.Schmalz and Earle L.Kent also explored such approaches, the latter with lops of metal ribbon, and in 1942 a young Cuban composer Juan Blanco proposed a "Multiorgan" based on wire loops, but could not afford the fee to patent it. Electrostatic discs containing sampled waveforms photoetched from oscillograms were proposed in a British patent by Estell Scott (1937). Other similar patents were taken out up to at least 1950 (Graydon F.Illsey, for magnetic discs), but none of them led to an

3. An exact contemporary of the historically better-known pioneering Telharmonium, the Choralcelo was first demonstrated in 1909. It resembled a two-manual organ; it not only had a normal piano mechanism but also produced sustained organ-like timbres by electromagnetically vibrating the piano strings and bars and sheets of glass, wood and metal using rotating magnetic discs and wheels. For all of this a special machine room was required. Several instruments were installed in private homes in the USA.

effective instrument. It was not until 1964 that a successful instrument based on current magnetic tape recording technology, and normally considered to have been the first "sampler", was marketed: the Mellotron.

The probelms that arose with early electromagnetic systems included the lack of an adequate frequency response, the difficulty of creating a magnetisable surface that was completely constant and the wear and tear produced by its contact with a playback head. Of these, only the latter affected musical instruments based on gramophone discs, but although these were explored in the late 1920s by J.B.Blossom, N.Banks-Cregier and others they were also unsuccessful.

Analogue Sampling: Photoelectric

The introduction of the optical film soundtrack for the sound film at the end of the 1920s added a powerful new recording medium in which these problems were largely solved; the sound is photoelectrically recorded on a narrow track beside the visual images (see Fig.3a), and the fact that it is visible means that it can even be monitored and analysed. Most of the photoelectric organs and organ-like instruments from the late 1920s and the 1930s were based on the mechanism of a rotating disc that interrupted the passage of a beam of light between its source and a photocell (already used by Hendrik van der Bijl in 1916 and envisaged in 1921 by Hugoniot), thus avoiding the wear and tear of direct contact with the surface of the recording. Many of these systems used a principle derived from that of the siren, interrupting the light-beam by a rotating opaque disc in which holes or slits had been cut (sometimes in combination with a static waveform mask), which do not concern us here, but a few were based on transparent glass or celluloid discs on which photographically-derived waveforms were outlined (see Fig.3b).

These discs were created by one of two techniques. In the first, more common method, the waveforms were initially drawn by hand and then photographed: some more experimental approaches even involved photographing letters of the alphabet and facial profiles. These therefore produced synthesised and not sampled sounds. In the second method, visual representations of sounds from existing musical instruments, such as could be shown on a cathode ray tube, were photographed. (Existing photographic images that do not represent acoustic sources can also be used, as in Guy Sherwin's short abstract films *Speed and Sound* and *Musical Stairs* (both 1977), in which moving images of railway tracks and the steps of a metal staircase are also the source of the optical soundtrack.)

The difference between these two techniques does not necessarily produce any great difference in the

Fig.3(a)
Representation of a short section of film. At the edges are the sprocket holes; the single line of the soundtrack, indicated by the arrow, is a recording of any combination of music, speech and other sounds. In the projector the film is transported in such a way that the soundtrack passes between a light-beam, and a photocell.

resulting sound, especially if an accurate visual representation were copied by hand; it is comparable, in today's terms, to that betwen a realistic digitally synthesised imitation of an existing instrument and a sampled recording of the same instrument. Among over a dozen photoelectric instruments invented in the period, at least three involved sampled sounds: these were the Hardy-Goldthwaite organ (New York, c.1930), Edwin Welte's Lichtton-Orgel (1934-36), with discs that were mainly derived from recordings of famous European pipe organs, and - mainly used for sound effects - the Singing Keyboard (Frederick R.Sammis, Hollywood, c.1936), the closest to the Mellotron, in which a short length of film with optical soundtrack was assigned to each key and played back when that key was depressed. Two further pioneers of photoelectric instruments of the period, Emmerich Spielmann (Austria) in 1931 and Pierre Toulon (France) in the mid-1930s, proposed sampled photoelectric discs, but did not construct such systems, while patents from the period include systems based on film loops by Victor H.Severy and by Clet Bedu and on discs by the Bechstein piano company.

A further application of sampling on optical discs was for storing both sound and speech in some telephone "speaking clocks" from the mid-1930s. Earlier speaking clocks (probably not used with telephone systems) were based on gramophone discs (as proposed by Edison in his 1878 patent), such as one devised by B.Hiller in Berlin in 1914 (preceded by his sprocketed celluloid film system of 1911, attributed by another source to Max Markus in 1902), which contianed 48 parallel disc-like grooves, one for each quarter hour over a twelve-hour period. Telephone speaking clocks were introduced in Rome in 1931 and in Paris in 1932, and may well have employed optical mechanisms, as was definitely the case with a machine built by the Swedish comapny Ericsson in 1934. In the same period E.A.Speight and O.W.Gill constructed TIM (accessed by dialling
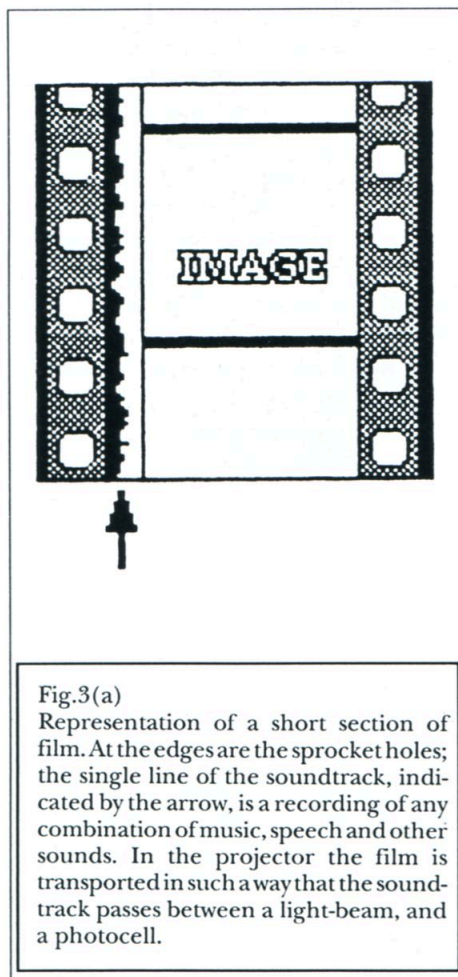
Fig.3(b)
Photoelectric tone-wheel (for the Lichtton-Orgel): each ring on the glass disc produces one of several different waveforms at a different frequency (the number of times the waveform is repeated in its ring). When the disc is rotated, each ring varies the way in which a light-beam affects a photocell.

those three letters) for the British telephone system, which was introduced in London in 1936 and by 1939 was in use in 12 more cities. It contianed four separate concentrically-banded discs for different segments of the spoken message plus the three eletronic timing "pips" ("At the third stroke it will be... precisely: * * *"). One of these machines has been restored and can be seen and heard in the Museum of Science and Industry in Birmingham, while the prototype for Mk.II (1954), with three such discs, is on display at the Science Museum in London.

Musique Concrete

In 1948 at the Paris radio station (RTF) Pierre Schaeffer initiated the activity in *musique concrete* that directly or indirectly influenced nearly all subsequent tape-based compositions. For the first three years, however, this was carried out not with tape recorders but with the older disc apparatus. Just as with the earliest Edison phonographs, machines were available both for recording sounds onto disc and for replaying (as well as mixing) them. A particular technique devised by Schaeffer was the *sillon ferme* (closed or locked groove) in which - similar to the later tape loop - a short sound was recorded in a groove that formed a complete circle rather than spiralling inwards. Schaeffer's diary for 1948 documents the various stages that led him to this new medium, which were initially influenced by the traditional approach to making music with musical instruments in real time. These included the idea of an organ based on gramophone turntables (April 1948), even imagining himself, Hollywood style, surrounded by "twelve dozen" turntables. Indeed he developed great facility in the studio for "performing" the playback and level controls of several (often four) playback turntables for creating his early sound collages, thus putting together - especially if the discs contained more than one closed groove - a type of
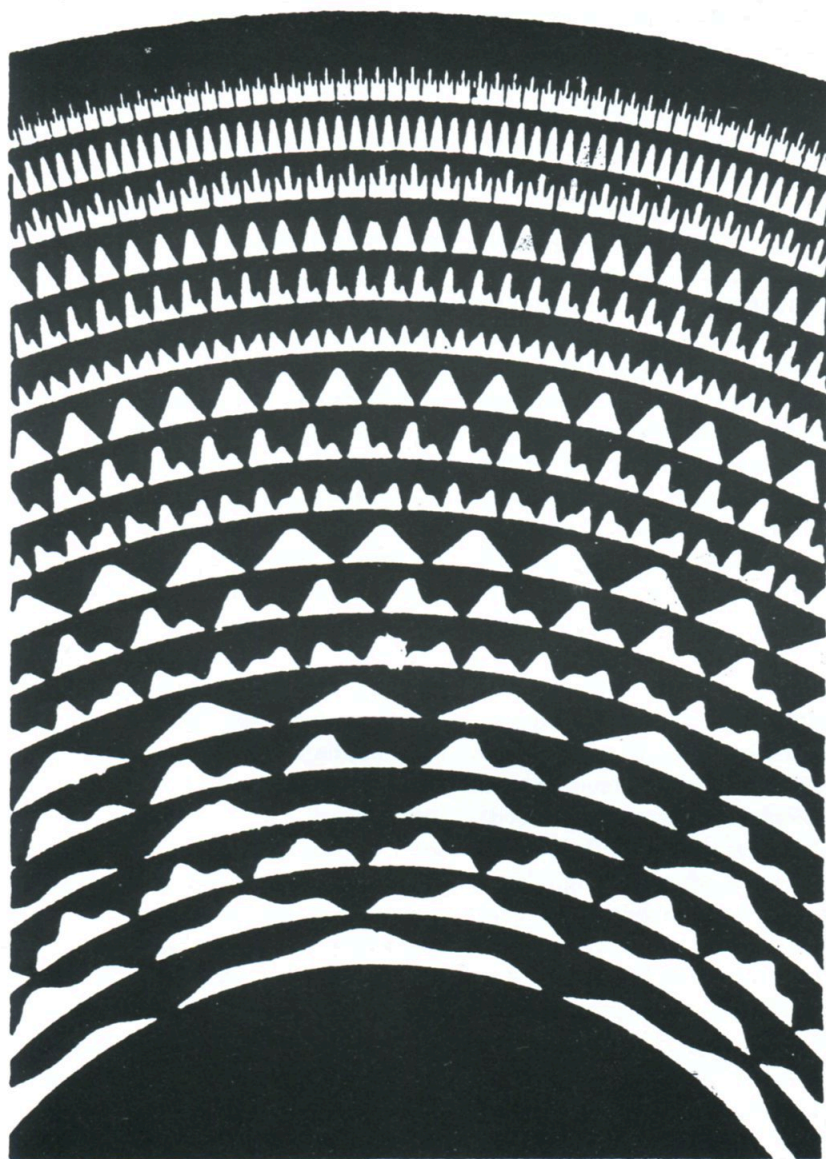
sampling machine.

History, however, led Schaeffer in a different direction. Perhaps the most radical feature in his work was the assembly of the final recording in several successive stages. A further development occured in 1951, when the French radio obliged Schaeffer's group (initially with great reluctance) to replace all their disc recorders. Several other composers also created pieces by means of disc manipulation around this time (Tristram Cary, London, from 1947, Paul Boisselet, Paris, from 1948, Raymond Chevreuille, Brussels and Mauricio Kagel, Buenos Aires, from 1950), but none of them matched Schaeffer's sustained and developing compositional activity in the medium.

The Tape Recorder

At the end of World War II a new tool had emerged, which was to form the basis for the new era in electronic music: the magnetic tape recorder, Earlier problems of the mechanisms, magnetic recording surface and electrical techniques (such as high frequency bias) had been satisfactorily resolved, and the machine was soon marketed with great success. Its earliest creative use, with less than ideal magnetised paper tape, appears to have been in film scores by the American composer Jack Delano, working in Puerto Rico from 1946. Between around 1948 and 1951 the tape recorder replaced all previous recording systems, such as gramophones and magnetic wire recorders, at European and North American radio stations. Very soon experimentation with the new medium began: electronic music studios were set up in several countries, some with specialised forms of tape recorder. In 1953 in Paris, for example, where the group had transferred all their disc techniques to the new medium of tape, Schaeffer patented the "phonogene", in which a loop of tape ran past a set of twelve playback heads, any one of which could be engaged by means of a capstan with

a different diameter, thus enabling the composer to transpose a sound to any semitone within an octave. Several Canadian electronic music studios received models of Hugh Le Caine's keyboard-controlled Special Purpose Tape Recorder or "Multi-Track" (1955), in whcih up to 10 stereo tapes or tape-loops could be individually varied in speed.

Commercial instruments followed soon afterwards. In the 1960s the first successful sampling instrument, the Mellotron (later, for legal reasons, manufactured as the Novatron), was based - much like the Singing Keyboard - on short lengths of magnetic tape. Only a few of its immediate predecessors, Harry Chamberlain's Rhythmate (c.1960), were built, and neither of its 1970s offspring (using 8-track tape cartridges), Dave Biro and Rick Wakeman's Birotron and the Bandmaster Powerhouse rhythm machine, was much more successful. Photoelectric sampling systems briefly emerged once again around 1970, with the small Optigan from Mattel and its derivative the Vako Orchestron. But while a few electromechanical instruments managed to survive during the 1970s, by the early 1980s the advent of digital recording totally superseded all previous sound-generating systems in cost, capability and efficiency. An exception is the musician Jacques Dudon, who since the mid-1980s has developed a series of unusual photoelectric instruments, but his hand-and computer-drawn discs use the principle of the optical siren and are not samplers.

Digital Sampling

Digital sampling involves the assessment of the waveform of the sound to be recorded in terms of amplitude, sampled in tiny slices at a rate that is normally between 15KHz (for telephony) and 50KHz. Such an analysis is the exact reverse of digital synthesis (and thus closely related), whereby a sound is assembled from a series of similar tiny slices and smoothed out by a digital-to-ana-

logue converter (see Fig.2). Since any waveform can be plotted in terms of loudness variations versus time, a digital analysis or synthesis of its contour, however complex, by means of a string of sampling slices is suficient to establish not only its timbre but also its frequency and dynamic level. Given this relationship between sampling and digital sythesis, it is not too surprising to learn that the designers who set up Ensoniq in the mid-1980s found that the digital synthesis chip they had developed for their first product was also ideal for sampling. Thus they decided to launch the company with the highly successful Mirage keyboard sampler.

In the same period the manufacturers of the two top-end computer-controlled digital synthesisers which were largely based on sampling, the Fairlight CMI and the Synclavier, began to extend the digital storage capacities of the instrument very substantially; in the case of the Fairlight this necessitated bringing out a new model. They targeted their systems not so much at musicians but at the commercial recording industry, as "tapeless studios" - thus the relationship between recording systems and musical instruments based on the same principles came full circle. Speaking clocks also became digital in the 1980s, such as British Telecom's Chronocal (1984), a sampler in which PCM-encoded speech and electronic "pips" are stored in ROM (Read Only Memory) and accessed under microprocessor control.

During the second half of the 1980s sampling became a common part of every manufacturer's elecronic keyboard range, not only in dedicated instruments but also as an additional method of generating more complex sounds. Since 1988 synthesizers, electronic organs and pianos have increasingly featured both synthesized and sampled sounds (or "resyntheis", in which synthesized sounds are based on modified samples). These are sometimes kept as separate groups of waveforms and sometimes more intimately fused. Thus, for example, Roland's Linear Arithmetic synthe-

sis (as in the D-series of synthesizers) provides several choices that include mixing synthesized sounds like PC, ones derived from samples and the two types ring-modulated together, while the sounds of some other recent instruments were created by placing a sampled attack in front of a synthesised body. By 1991 80% of synthesizers were based on sampling/synthesis combinations, and before too long, with computing power greatly increased and at the same time much cheaper, the distinction between the two will become even more blurred. It is likely that digital sampled sounds, which have up to now been stored on floppy disks, hard disks or CDs and loaded in RAM (Random Access Memory) in a computer when required, will, like their analogue ancestors, soon be accesible in real time, either from permanently running high-speed hard disks or CDs, or some future storage medium.

The most expensive part of sampling is the large amount of computer memory that is needed, and thus capacity of the storage medium. The CD has a far greater storage cacpity than any other existing format that can be inserted into an appropriate playback machine (which is possible with only some hard disks). Autumn 1992 saw the launch of several new systems that relate to recording and sampling. Two new formats are Philips' Digital Compact Cassette and Sony's MiniDisc, related to the familiar cassette and the CD respectively, but aimed at the consumer market rather than the professional one. Also aimed at consumers as well as for educational purposes are CDI (CD-Interactive), which combines a multimedia combination of high quality audio and video with substantial interactive possibilities (as with the much more expensive Virtual Reality), and Pioneer's new CD barcode system, which makes sophisticated manipulation of sound recordings available to anyone. But more unusual formats that are being developed for other purposes may also have potential for sound sampling; if a machine contains a computer, as all sophisticated electrical equipment already does, it

matters very little what the machine is used for. One such format is the "smart card" (liek a credit card, but containing a miniscule comuter chip), that is already used in some countres, such as for public telephones in France, and is likely to replace existing bank and credit cards.

Another application of sampling, in both sampling machines and CD players, is "oversampling" (originally two, four or eight times, and most recently up to 32 times). This enables noise and other unwanted effects that can result from the sampling process to be reduced; the machine interpolates newly calculated matching samples between those that make up the sampled sound or recorded piece of music. As shown in Fig.2, the higher the sampling frequency is, the greater fidelity will result; oversampling effectively multiplies the sampling frequency without requiring nearly as much storage capacity. This relates to another currently popular approach, compressing the information to be sorted by eliminating elements that the computer can easily recreate; when only part of the information changes at each sample, then the unchanging elements are not stored each time.

Explorations of Sampling by Musicians

Apart from commercial productions, a number of one-off instruments and systems based on treatments of prerecorded sounds have been built or adapted by musicians for their own performances. Earlier ones involved storage on disc or film soundtrack, while more recent ones have been based on magnetic tape or actual sampling machines. Once again only those that use sampled sounds are described here. Gramophone records were experimented with (especially by means of reversal of playing direction and speed changes) in the 1920s and 1930s by composers such as Darius Milhaud and Edgard Varese, but did not result in any compositions, except for

three recorded studies (now unfortunately lost) produced by Paul Hindemith and Ernst Toch in 1929-30.

John Cage composed several works that involve gramophone records, an early tape composition *Imaginary Landscape No.5* (1951-52), which consists of eight layers of precisely timed extracts from any combination of 42 gramophone records, *33 1/3* for 12 gramophones (1969) and part of the "accompaniment" for the singers in *Europeras 3, 4 and 5* (1990-91), while in his *Imaginary Landscape No.1* (1939) test recordings containing constant and variable frequency oscillator sounds are manipulated by hand. Various handheld pointed objects replace the gramophone stylus in part of Mauricio Kagel's *Acustica* (1968-70). Other manipulations of records occur in the rythmic "scratching" adopted by disc jockeys in the 1970s, which is only one of the wide range of transformation techniques developed since 1979 by Christian Marclay for his performances with multiple turntables. Like Milan Knizak (since 1965, under the title *Broken Music*), Marclay often features composite discs assembled from different fragments.

Such an approach already characterised the very first sound collage recoridngs, created in the late 1920s in Germany in particular. Hindemith and Toch's "Grammophonmusik" studies, based on instrumental and vocal recordings, have already been mentioned. After the introduction of the film soundtrack for the "talkies" in the late 1920s, a number of filmmakers used the soundtrack on its own - without visuals - because it was the only existing longer duration recording medium (compared with the 3-4 minutes of one side of a 78rpm disc), and one that could easily be cut and spliced. Only two of these survive: Fritz Walter Bischoff's *Hallo! Hier Welle Erdball* and Walter Ruttmann's better-known *Weekend*, which evokes life in Berlin through intercutting words, music, sounds and noise. Film music during the 1930s, especially in France, featured various treatments of sound record-

ings - similar to those mentioned with gramophone records, and probably created with discs before being transferred to celluloid - by composers such as Yves Baudrier, Arthur Honegger and Maurice Jaubert. Often an eerie quality was added to the sound by writing out and recording the music in reverse, then playing the recording backwards, as Jaubert did for the cortege-like slow motion pillow flight in *Zero de conduite* (1933).

Manipulations of prerecorded magnetic tape in the manner of playing a musical instrument have been explored by a number of musicians since 1960, making particular use of the fact that the tape can be played forwards or backwards. Short lengths of tape provide the sound sources in Laurie Anderson's *Tape Bow Violin* (1977), replacing the hairs on her violin bow, on which they are drawn past a playback head mounted on the violin. A similar system was used in an early instrument by Michel Waisvisz, where lengths of tape are pulled backwards and forwards by hand past a replay head mounted on a stand. Even shorter prerecorded tape fragments were glued onto flat surfaces and played back by hand-held playback head in Nam June Paik's *Fluxusobjeckt* (1962), Jon Hassell's *Map* (1967-68)

and Akio Suzuki's more recent *Lateral Thinking Instrument* - in the two latter examples, strips of tape are lined up parallel to each other to form a two-dimensional rectangular block that can be played back from any direction. Dick Raaijmaker' *Der Leiermann* (1991) features a complete recording of Schubert's song of that name about an organ grinder, played back on a converted reel-to-reel tape recorder on which the tape is spooled through the heads rather unsteadily by turning a crank-handle. Even commercial digital samplers have not been immune to unusual explorations by composers. Sophisticated performance controls have been developed by Nicolas Collins in *Devil's Music* (1985) and much of his subsequent work, often using cheap models with limited capabilities, and including a highly effective modified trombone controller, Waisvissz in *The Archaic Symphony* 1987), and others.

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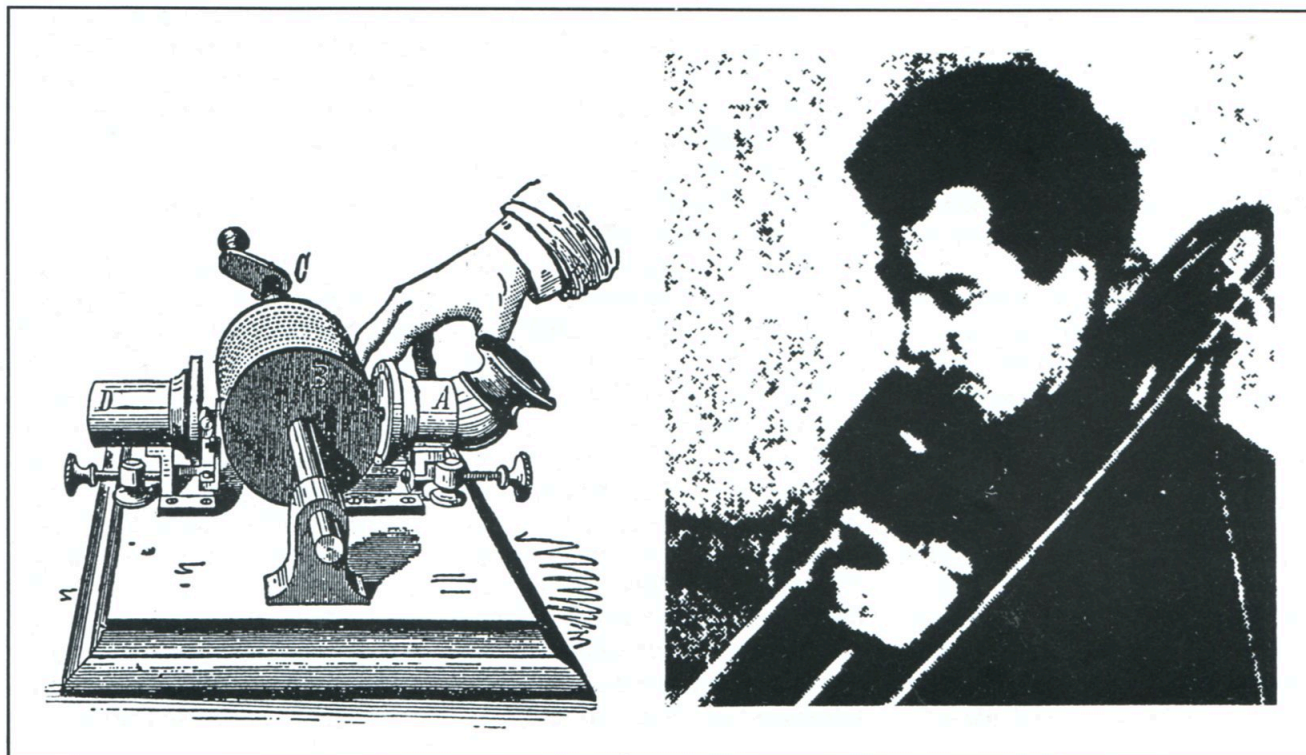Samplers: the Cold Hard Facts, Keyboard, March 1989 (special issue).
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sampling notes: in the studio

Q: I guess that sampling is more or less the rule in a lot of the music you engineer for. How will a typical group put a piece together?

A: A typical group's producer has a machine like a Linn/Akai MPC60, which has 12 pads like a drum machine, lots of memory for sequencing, and most important, it's a huge sampler too. This person spends time at home with their huge record collection finding suitable bits to build a new song with. Usually they'll start with a drum loop, perhaps from a James Brown record - 1,2, maybe 4 bars. Then a loop with a bass line (maybe with drums on too), say from the Zapp Band - 1 or 2 bars. Horn section from an Earth, Wind and Fire album, electric piano from some incredibly obscure funk album, add a few more drum loops to fatten it up and give it a rolling, driving feel. Some percussion, tambourine, hi-hat samples. A lot of producers have their own 'signature' hi- hat and tambourines which they use on all their stuff and won't tell anyone where they sampled them from; if you recognise it you're a true fanatic scholar of all the old records. The 808 Kick drum is a major part of the sound, the 'boom'. It comes from the Roland TR808 drum machine if you turn the decay on the bass drum all the way up. Very few people actually own an 808, but there are plenty of samples around. You can also make a good boom by sampling an oscillator, somewhere between 60-100 Herz and adding a regular kick drum sample to it. The sound is so deep it can be way up in the mix like it's

supposed to be and not get in the way of anything else.

So all these loops and sounds are put on different pads on the MPC60 and sequenced into a song form. Before it's actually a song, with breaks, choruses and so on, the whole big rolling piles of samples and loops is called a 'beat'. But to arrive at this, getting all the loops and samples - most of which were originally in different tempi - to play in perfect synch with one another, is a whole job in itself. They all have to be synched up with the metronome in the sequencer. Drummers speeding up and slowing down with the 4 bars of a sample, horn sections slightly behind or ahead of the beat - all the natural human 'imperfections' sometimes make it necessary to break a loop into 2 or 4 separate segments, shortening or lengthening each to get it 'in time'. All these loops have little idiosyncracies, people talking, band/audience members shouting, stuff going on in the background, scratches and pops from the old vinyl, all of which add up and contribute to the overall end sound.

When it's been shaped into a song, it's all printed on the multitrack, each sample and loop on its own track and the 'live' parts are added: maybe a bass guitar, wah wah guitar, sax. Then the vocals and scratches. The scratches are added by the DJ, the guy with the turntable and crates full of old records. The DJ is almost like a soloist and spaces are left in the song structure for scratching, the same way a rock band leaves a space for a guitar solo and for fills and flavouring throughout the song. They're really good at knowing just where to get the right little phrases and sounds which somehow relate to the lyrics of the song, often rearranging the words of an

old song, or piecing lines from several songs together to make them say what they want for a new song. A really great DJ is unbelievable and fun to watch and listen to: real performers.

Q: Do they discuss their own attitude to sampling/stealing, if so, what is it?

A: In the early days of sampling other songs to make new songs, no one gave credit to the original artist, but that's definitely changed. On the last major rap project I engineered (Yo Yo's 'Black Pearl') there was a guy in the studio whose job it was to watch and write down every little thing that was sampled or scratched, noting the original artist, writer, song title, album &c on which it originally appeared, so that the original artists would not only receive credit for their ideas, but be paid too.

Now it's cool to be sampled, it means you're fresh, and groups sometimes do stuff on purpose that they know other groups will use; it's cool to sample the freshest, newest stuff.

Occasional absurdities occur, like a group complaining about the group they sampled wanting to be paid, or a rap group suing another rap group for sampling something they themselves sampled off another record. But in general it means you're respectable if someone wants to sample you.

Q: Time for an anecdote.

A: Well, one time when working with a rock band I accidentally erased a harmony part off one of the choruses and of course the guy who sang it was out of town and no one else in the band could simulate his voice and they had to finish and mix the song today to take it to a big record executive so they could be signed. Having committed the atrocity, which no one had noticed yet, I remained calm and while no one was looking sampled the guy's part from a previous chorus and flew it into place on

the damaged chorus. No one ever knew, avoiding many hours of grieving and/or beating, and careers as megastars forever ruined. I think it's extraordinary because I never moved from the console; I sampled the part on a TC Electronics 2290 and triggered it from a bass drum on the tape, so it didn't look as if I was doing anything weird; just made a quick patch and rolled the tape kinda sneaky. I know otherwise the session would have screeched to a halt, which I wouldn't have minded in some cases, but these were really nice people and I should have hated to have seen them kill me.

Q: What/who is most sampled - any idea why - what do the users say?

A: *The most sampled thing in the universe has to be James Brown's 'Funky Drummer', any JB stuff, because it's the place modern pop music came from, the definitive funk music. Then, in no special order, there's Parliament/ Funkadelic, Zapp Band, Average White Band, all the '60s and '70s Funk/R&B records - the stuff the producers and artists grew up with. A lot of sounds come from Break records ('Ultimate breaks and beats' from Streetbeat Records, NYC). These are records made for DJs containing popular drum-*

beats loops for 5-8 minutes, all kinds of short sounds and music bites, horn 'hits', drum fills, screams, sound effects, old TV and movie characters' voices &c. TV news announcers are popular sampling victims, especially clean-cut suburban white guys making comments about inner city violence or gang related stuff. Many practitioners of rap grew up in these neighbourhoods, so they're both angered and amused at a lot of other people's ideas about them.

Chris Cutler
December 1992

Where's the party?   David Evans

MANDATORY MELTDOWN 1

an interview on the destruction of his CD *plunderphonic* with
John Oswald

In this conversation between John Oswald and Norman Igma, Oswald explains why his recently released Plunderphonic CD is no longer available.

Norman Igma: What were the events which led to the eventual crushing of the plunderphonic CDs?

John Oswald: Distribution of the CD commenced around Halloween. There were about a thousand copies pressed. Copies went to libraries, radio stations, the artists who had been electroquoted, and the press. One copy was requested by and received by a so-called reporter for the Canadian Broadcasting Corporation. He was preparing, as it turned out, a sort of docudrama for which he was manipulating information to fit his thesis that plunderphonic is an opportunistic sham. In an attempt to create some news for this item he flashed his copy of the CD, which has as cover art a photo collage of Michael Jackson as a naked white woman, in front of Brian Robertson, president of the Canadian Recording Industry Association, nemesis of the appropriative arts, as far as he's aware of them, and a flaming prude. You hear, as was subsequently broadcast on national radio,[1] a great gasp, and then after an edited insert in which the reporters informs us that *John Oswald's so-called macroquotes look more like copyright violations*, Mr Robertson says, in part,... *Uh it, maybe it's hiding behind artistic expression... perhaps, but all we see it is, is another, is just another example of uh, of theft.*

NI: How did this reporter, as you say, manipulate information?

JO: His rant was above and beyond the subtle ways images are selectively laundered in the media; an example of the opposite being how I just quoted Brian Robertson precisely, with all his verbal groping, because it makes him look stupider than if I had simplified it and cut the stutters and hesitations. Since Mr Robertson has on several occasions slandered me in the press and even broadcast suspicions about the veracity of my participation in our subsequent legally bound agreement, I have no qualms about letting him, for the sake of accuracy, sound authentically muddled.

This reporter, a failed pop musician – his name is Little – was careful never to mention in the context of his docudrama, which coddled others, friends of the reporter I suspect, who profit from covert sampling, that my release of overt sampling was not for sale. His upside-down thesis was to applaud those plagiarists who sample for their own profit without accrediting sources, and a claim that plunderphonic was artistically suspect and not acceptable to the recording industry. He baited Brian Robertson, the guard dog for the major record labels. He's the guy whose job it is to sniff out and have prosecuted those who manufacture pirated, counterfeit replicas of the records of Michael Jackson and other performers who sell so much that it's difficult to keep track of who's reaping the profits.

NI: And so you've been lumped in with the pirates.

JO: Well, there are the traditional associations between the words "plunder" and "piracy". Perhaps I should have called this stuff *flatterfonics* or *quote-a-musics* or something cute and unthreaten-ing. Something I have discovered from talking to employees of this industry, including lawyers, administrators and performers' managers, anyone who prefers to talk about the "music business" rather than the music itself: none of them can get a handle on why someone would create something, except to make money. To them it's like an incomprehensible alien life form.

NI: But since you weren't making money from it, why should any of them be concerned?

JO: Because if it manages to come to their attention at all, which this item has, it has gone through enough filters of inattention to be a bit of a rare surprise. Now if you look at the plunderphonic CD from the point of view that it's an attractive package of a large quantity of music in some part by the most popular perpetrators of music, and it's being given away for free, when you are in the business of selling CDs with much less content for \$20, you might consider this unfair competition. Not only am *I* not getting any of the consumer's entertainment money (and as I've mentioned, some of my adversaries find this contention suspect), but neither are Michael Jackson nor the Beatles, nor any of the other performers whose rights he owns.

There are fewer copies of the plunderphonic CD in existence in the world than a single record store would sell of a major hit record in a week. Nonetheless the implications of the existence of these few hundred discs are unpredictable – they might affect the market in some way. Mr Robertson undoubtedly has all sorts of questions concerning the existence of this bit of what he would consider visual and aural pornography, above and beyond his publicly denoucing it at first glance.

NI: So what did he do next?

JO: Little gave him my phone number,

and he called politely to request a copy. This was in mid-November. I wasn't aware of the tone and content of the Little show until after its broadcast in January. I was aware of CRIA's affiliation with the major record labels who distribute a large portion of the material quoted on my disc so, since I think these sources have at least as much right as anyone to hear this material, I mailed CRIA a copy. I was in the process of trying to get copies to the quoted parties but I should point out I was being selective about this. In the case of Michael Jackson I didn't send copies to his management for the same reason I didn't contact them for permission to use this material before the fact of its creation or reproduction. The answer before the fact would be the same as their response after the fact: *No way*. At least after the fact, the evidence of its integrity would be available for everyone to judge. I had sent a copy of the disc to Michael Jackson's fan club, which is the only address you'll find on the *Bad* disc. I took advantage of opportunities to have copies delivered in person to the electroquoted performers, so, for example, when Paul McCartney came through town, someone who was to interview him had a copy to pass on. I generally avoided sending copies to the management of these performers for the same reasons I've made the business aspects of the entire project secondary to creative participation.

But here was a request for a copy from someone in the business, and I was obliging myself to accommodate anyone who was interested in getting a copy. Because of the small number of copies in existence, individuals have been directed to get their copies by dubbing radio broadcasts or library copies. Devoting distribution to public access organisations was my way of making copies available in some way to a large number of people. CRIA was an obvious conduit to the major labels and I was concerned not to withold any information from anyone who was curious, because the project is set up in such a way that there's nothing to hide. This is still the case.

A week went by and then I got another phone call from Brian Robertson. He asked if I was aware that my CD probably infringed the copyrights of the artists I used. I replied that in my opinion, according to my understanding of the copyright laws, which I had read, albeit with a layman's understanding, I was not infringing anyone's copyright. I had sent the signal that I was operating without legal counsel. He said he'd call me back.

A few days later he called to say that he had listened to the track DAB and he was fairly sure he could detect actual samples of Michael Jackson himself in my song. I pointed out to him that the piece was made entirely, 100%, from samples of Michael Jackson's song "Bad" and that this fact was clearly indicated in the notes which he had for the disc. He said he'd call me back.

The important aspect of Mr Robertson's aural detective work was that what he thought he heard was pointed out to him before he listened to it. Michael Jackson samples can be found in all sorts of songs on the hit parade and are probably barely hidden in as many others. The qualifier for practical appropriation most often cited by pop people, with the exception of the rappers, is that it's O.K. to sample as long as the sample doesn't sound too much like the original. Meaning: sampling is O.K. as long as you don't get caught. By this rule, my policy of acrediting sources as if I were writing a research paper is not the way to play the game. *NI: Do you think that if he hadn't been able to distinguish Michael Jackson's voice he would have left you alone?*
JO: Well, first of all, we can't be sure that he would have been able to distinguish anything by ear without being told what it is first. You don't have to have any particular listening skills to have his job.

The most influential distinction in the music world today, after racist and sexist categorisation, is between the familiar and the unknown. the common critical declensions of artistic experience are *likeable* (as in "I know what I like"), *boring* and *weird*. CRIA always advertises the fact that they represent the purveyors of 95% of the recorded music bought and sold in this country. They don't say that this 95% represents less than 1% of the variety of recorded music available. I imagine that to Brian Robertson plunderphonic is part of an indistinguishable weirdness which he only occasionally encounters. But most people are more visually than aurally literate. So he was able to read the cover photo all right, and as he has stated elsewhere, that what's got him going.[2]

Next he phoned to ask me for extra copies of the CD. He said he could pay me for those copies. I reiterated that I was not selling the disc under any circumstances and asked who the extra copies were for. He said they were for friends of his in the recording industry. I asked him for their names so that I could send them copies directly. He said their names were confidential. I replied that I was unwilling to give copies to unknown recipients but that he was free to make dubs of his copy of the CD. The packaging states that not-for-profit dubbing is encouraged.

This was a funny moment because I was talking to the one guy in Canada to whom any kind of tape copying is an inconceivable perpetration of immoral behaviour. In CRIA's eyes the average consumer, more than half of whom condone home taping, is a pirate. Their latest solution to this crime wave is to lobby for the instigation of a royalty tax of 50 cents on every blank cassette tape sold to non-industry individuals. So even if you're recording baby's first words or yourself playing an improvisation on the bazoozophone, Michael Jackson and the other constituents of that aforementioned 1% will get money for the record they didn't sell. So Mr Robertson, somewhat aghast, said he'd call me back. But this dubbing idea was the last straw and he never did call me back.

Next I heard that someone was hassling the CD plant that pressed plunderphonic, saying, *How could you perpetrate such a desecration of those who provided your main bread-and-butter?* or something like that. This plant was, in my experience, not very organised. Even though they had manufactured this package that clearly listed
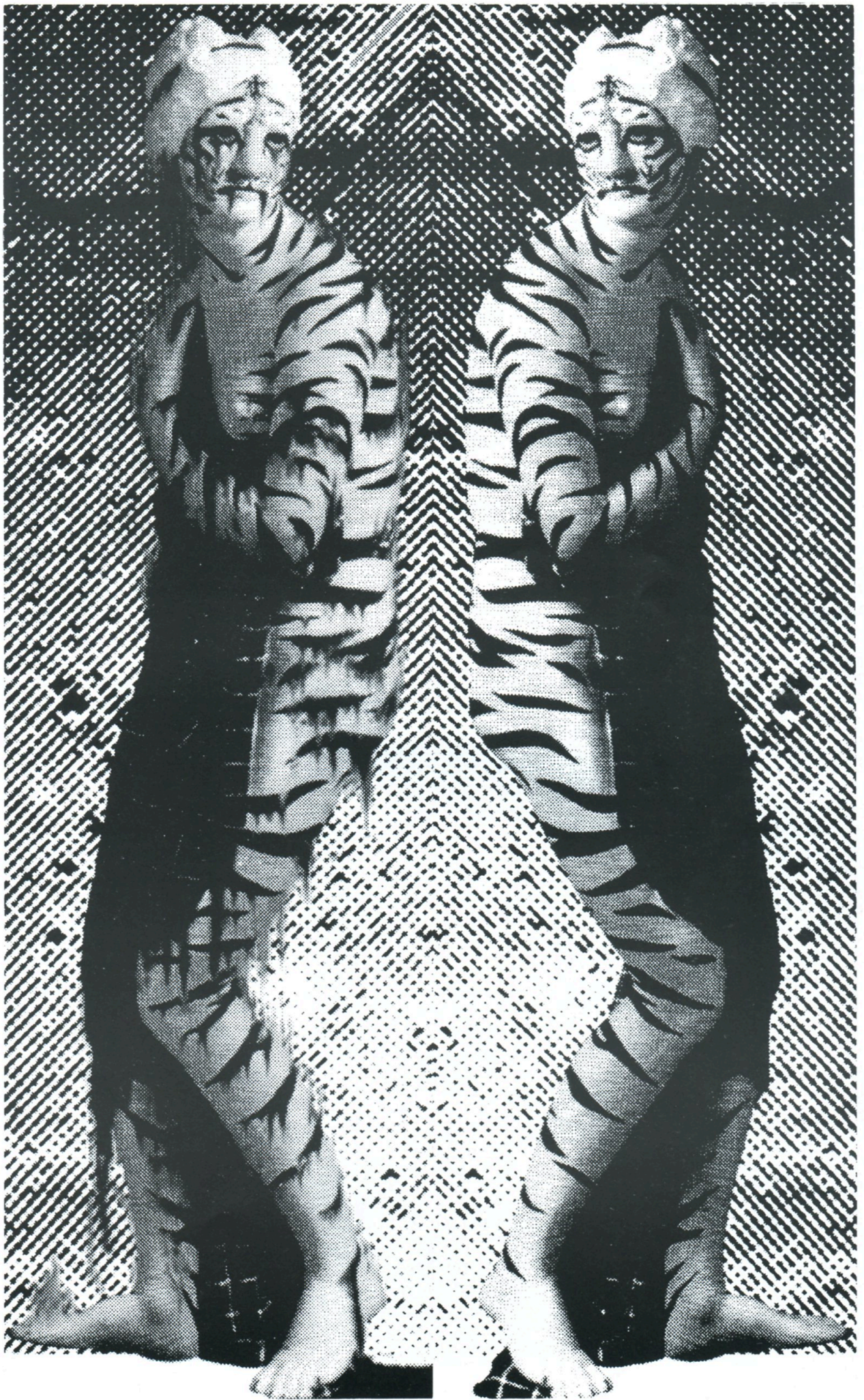
credits for a lot of familiar names, had NOT-FOR-SALE indications on the disc and cover and called for the specific disabling of the copy-protection flag that is included in digital encoding of almost every CD, and they even got a copy of a big article in the *Globe and Mail* by Robert Everett-Green with the title "Blurring the line between thieving, copying and creating",[3] (the one thing they didn't have was the Michael Jackson image, which was being printed elsewhere), they claimed to be unaware of the nature of the project and asked me for a letter absolving them of any apparent intelligence.

Several weeks later I received a letter from CRIA's lawyers, in which they stated that it was irrelevant to them that I was not selling the plunderphonic CD; they considered it to be an infringement of their clients' copyrights and therefore I should acknowledge their letter so that they could undertake to recall all copies of said CD. The letter included some massive grammatical blunders: "Neither Michael Jackson nor CBS Records we understand have not granted permission to Mystery Laboratory to use either the Michael Jackson recording of Bad, or the photo or the name of Michael Jackson." So taking the double negative literally, I was sanctioned to plunder. Alas, errant English, legally speaking, isn't much of a defense.

At first I was surprised that CRIA considered itself in a position to exert a moral copyright claim. Copyright roughly covers two distinct areas: one is financial control over a piece of creative property, and one is control of matters of morality in the relation to that property. By stating that the financial circumstance was irrelevant, CRIA was implying that they would be taking a moral stand; something along the lines of my mutilating Michael Jackson's image, or my defaming him, or my misleading his fans. To give you an example of this sort of thing: the only successful exercising of moral copyright in Canada, at least prior to last year's revisions of the Canada Copyright Act, was the case of Michael Snow sueing Cadillac-Fairview for tying

ribbons around the necks of his goose sculptures in the Eaton Centre. That's a case of an artist claiming that his work was being defaced and his copyright infringed.

NI: Did anyone note the irony of Michael Snow being one of the guest musicians on your release?

JO: All the copyright lawyers were familiar with this case. They'd raise their eyebrows when I would point out Mike's name in the credits.

My assumption up to this time was that if there was to be a contention of moral copyright infringement in relation to Michael Jackson's image it would have to be by Michael Jackson himself. That's his copyright, not CRIA's. My calculation was that even if he didn't like plunderphonic, which I was tying to get to him with the optimistic notion that he would be flattered; even if he hated it, he wouldn't try to sue me because this would create a lot of publicity for this little project which no one might notice otherwise, and besides, what would it look like for a billionaire pop star to sue a guy who was giving away a handful of free CDs?

But I did some reading and discovered that in Canada with the new copyright revisions, "Contrary to the notion that moral rights pertain to an individual creator, corporations will apparently benefit from the enhanced moral rights provisions in the case of photos and sound recordings where... the current act fictionally deems them authors of these works."[4] So, I assume, as long as Michael Jackson didn't complain about this, CRIA would claim the rights to "Bad" as its fictitious author.

NI: Is there any legal protection for the sort of thing you do?

JO: I suppose in some countries it could be defended on the grounds of being parody. The aspect of parody seems to be more definitely protected in the US law than in Canada, where I don't remember it being mentioned. There's less value in a sense of humour up here, legally speaking.

But the idea of legal protection is dependent on how much time and money you're willing to invest to establish your eligibility for that pro-

tection. One lawyer I consulted actually speculated that since there wouldn't be any hope of my adversaries recouping legal costs in a case against a pauper like me, that it was more likely that they would send someone around to beat me up or otherwise harass me, in order to convince me not to waste their time and money. I decided to try to negotiate.

NI: But this sort of decree, that your music is illegal, will restrict your right to create the sort of music that you do.

JO: First of all, only Brian Robertson and CRIA's lawyers have *claimed* that it's illegal. Nothing has been tested in court. It remains innocent until proven guilty. I haven't agreed to anything which compromises the integrity of the project.   Secondly, I'm perfectly free to continue to create this sort of transformational appropriation of music. I can continue to make these things. The one thing that has been compromised is the distribution of my creations. I'm sure CRIA will be interested in inspecting any recording I might put out in the future. And I get requests for material from various record companies which lately always include some sort of qualification that it be devoid of plunderphonic.

I should go on to say what happened next. According to the letter I received I was to cease and desist distribution of the disc by December 24th or there would be trouble without prior notification. So they didn't want me giving out any CDs as Xmas presents. I got a lawyer to assess the letter, a couple of more lawyers to chat with me about morality and copyright, and then, by recommendation, a rather expensive lawyer whom I wasn't paying for philosophy. His job was to make CRIA happy quickly, but within certain limitations. These limitations included leaving alone those copies of the CD which already had been distributed. I was unwilling to undertake or participate in a recall. Neither was I willing to admit to any infringement. The one concession that seemed to interest CRIA the most was destroying CDs. I am less than devoted to the task of distribution in the first

place, so the idea of unloading the few copies I had left in my possession wasn't too painful. And the fact that CRIA, CBS and the Jackson Corporation wanted to become the modern-day equivalent of book burners seemed like an appropriate way to let them present themselves. So CRIA's lawyers and my lawyer agreed to exchange all the discs I had left, plus master tapes, for crushing, plus my agreement that I wouldn't manufacture or distribute any more of these discs. This happened.

NI: The master tapes were destroyed?

JO: In the first week of February. I read about it in the newspaper. Considering that each copy of the CD is, soundwise, a virtual clone of the master, the original tapes are redundant. The interesting aspect was that although as a result of the agreement I had no copies of my recording, I could always go over to the library and listen to it. Following the exchange of these material manifestations of my artistic efforts I sent out press releases to wire services and the news media, and thereafter got out of the plunderphonic distribution non-business.

The press release included CRIA's phone number. I was hoping they would get more publicity from their actions than I would, and let public opinion of the event fall where it may. One of the local dailies picked it up for a feature item;[5] and there was an editorial in a local weekly.[6] I got phone calls from a couple of magazines in England; Brian Robertson and I were individually interviewed a few times for radio; the Brave New Waves show on the CBC sent out *Free John Oswald* buttons; and that was all that happened, until lately, two months later. The info seems to have just sunk in because now I'm getting lots of phone calls from the press and radio. It's no longer a news item. Now it's this historical bit which is getting mentioned retrospectively. I also get several dozen letters a week from individuals, radio stations, and libraries, mostly hopeful that they somehow can still get a copy of the disc.

NI: You've said that you can continue to make plunderphonics, but since you can't distribute it it's un-likely that we'll hear any of this material.

JO: This depends on how enterprising a potential distributor is. Even if we stick to talking about the existing plunderphonic CD, the case is not closed. Opinions differ about its commercial viability. The executive producer of a major US new music label called to say they'd put it out in a minute if they thought it was possible. Other music industrialists have discussed the feasibility of putting it out in a country where the copyright laws are different. There's a definite possibility of licensing some of the material, to be combined with other material, undoubtedly without a naked Michael Jackson on the front, as a commercial release.

NI: What is your position on these proposals?

JO: I don't have one. Right now I'm just listening to what these guys have to say. It's conceivable that the parties who demanded the destruction of plunder-phonic would be affiliated to its re- release. It would be very interesting to compare a sanctioned, sanitised version to the original, which is relatively uninhibited by the practical considerations of being a saleable commodity.

NI: But don't you have to make an effort to protect your creative endeavours?

JO: I'm an unwilling promoter. I dislike politicking for art. I prefer to sidestep issues. plunder-phonic still exists. It's a pop record, by virtue of the presence of some of the well-known personalities featured on it.

NI: It's a pretty weird pop record!

JO: The things that catch my interest in the morass of the media are those items which defy categorisation, however briefly.[7] plunderphonic would be considered to be obsessively unpop except for its pervasive reliance on pop music for its sound. This sound or comprehensibility is apparent to a broad range of listeners. It has pop credentials. Categories aside, its distribution is now in the hands of the public, and its persistence will depend upon their interest. If someone wants a copy badly enough, they'll probably be able to find a copy. But it won't be spoon-fed to them. They'll have to forage for it.
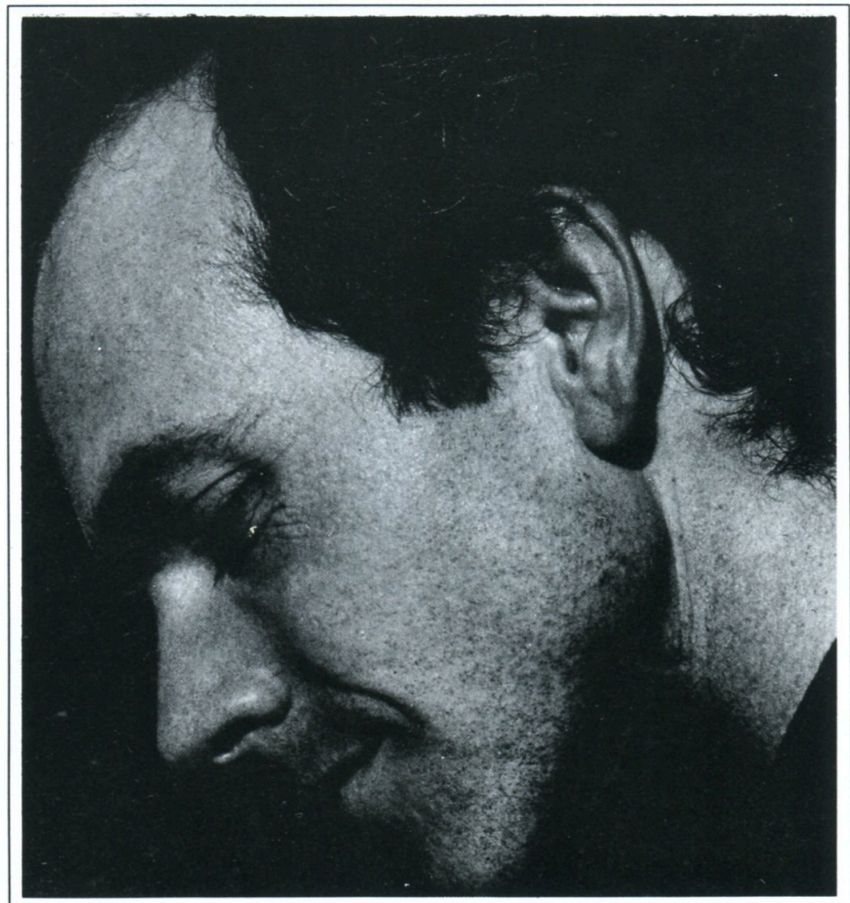
NOTES:

1. CBC Sunday Morning, 7 January 1990
2 Brian Robertson in conversation with Robert Everett-Green. Mr Robertson said he would have pursued his case against the plunderphonic CD even if the offending cover was removed. Mr Everett-Green wrote the first review of plunderphonic (see next item) and the first editorial speculating on its legal problems, "Who's manning the barricades between art and commerce?", *Globe and Mail*, 20 January 1990, p.C14.
3. *Globe and Mail*, 14 October 1989, p.C9. "An incidental effect of the no-sale policy is to remove [Oswald's] work from the legal scrutiny of the artists he has plundered, especially the tiny surgery-obsessed singer whose hit single is thoroughly revamped on the disc, and whose image is 'sampled' on its cover."
4. *Intellectual Property Journal* v.5, 128.
5. "Recording industry crushes composer's project" by Chris Dafoe, *Toronto Star*, 9 February 1990, p.D20, in which Brian Robertson is quoted as saying "[Oswald] took sampling fifty times past what we have come to expect. That together with the graphics made it necessary that we do something."
8. "Plunder Blunder" by Bill Reynolds, *Metropolis*, 15 February 1990. "If Oswald committed any indiscretion against the prevailing order, it was to subvert the usual architectonic of retail market distribution systems with an electronic surgeon's precision and an academic fastidiousness that bamboozled the image makers, bean counters and guard dogs of the multi-billion dollar recording industry."
7. "The very notion of categories runs contrary to art, for art is process and conforms to no rules." From "20th Century Music: The Impoverishment in Copyright Law of a Strategy of Forms" by Janet Mosher, *Intellectual Property Journal*, v.5.

Further reading:

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John Oswald is Director at Mystery Laboratory.

Norm Igma is a Mystery Lab observer.

Beethoven steamrolls over Michael Jackson

NEW YORK, (Reuter) — Michael Jackson was accused Friday of taking credit for writing part of Beethoven's *Ninth Symphony* into his hit album *Dangerous* and using the Cleveland Symphony Orchestra's recording of the classic.

Representatives of the Cleveland orchestra, the Musical Arts Association, filed suit against pop star Jackson and Sony Music Entertainment Inc. in Manhattan federal court. The group is seeking at least $2 million in compensatory damages to cover lost royalties and $5 million in punitive damages from Jackson, Sony and its Epic Records subsidiary. According to the suit, *Dangerous* has sold in excess of 14 million copies throughout the world.

The Cleveland Orchestra alleges that the defendants wrongfully used one minute and seven seconds from its 1961 recording of Beethoven's Symphony No. 9 In D Minor. Op. 125, Choral, at the beginning of Jackson's song "Will You be There".

Orchestra sues M

Reuters News Agency

NEW YORK — The company that manages the Cleveland Orchestra sued Michael Jackson and Sony Music Entertainment yesterday for allegedly stealing one of the orchestra's recordings for use on Jackson's hit album *Dangerous*.

The suit also charges that Jackson is credited with writing at least part of Beethoven's *Ninth Symphony*.
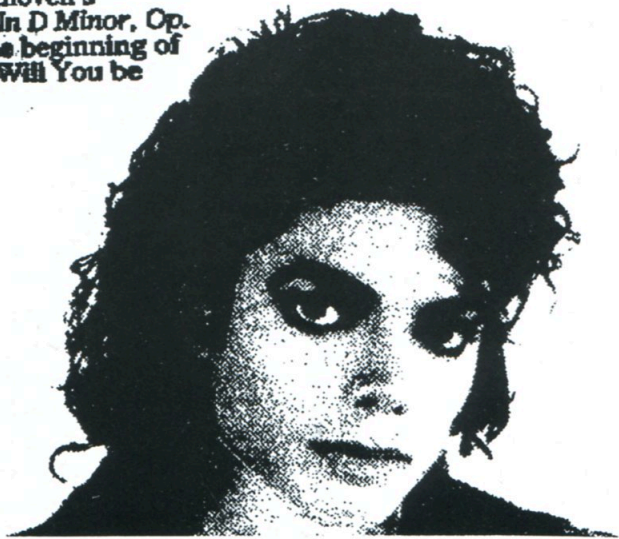
U 2 Negativland

The case from our side

Negativland is a small, dedicated group of musicians who, since 1980, have released 5 albums, 4 cassette-only releases, 1 video, and now a single. This single, which is entitled "U2", was created as parody, satire, social commentary, and cultural criticism. As a work of art, it is consistent with, and a continuation of, the artistic viewpoint we have been espousing toward the world of media for the last ten years.

Island Records and music publisher Warner-Chappell Music, presumably acting on behalf of their group U2, have instigated legal action against our single and have succeeded not only in removing it from circulation, but ensuring that it cannot ever be released again. It is clear that their preference is that the record never even be *heard* again. The terms of the settlement that was forced on us include:

Everyone who received a copy of the record - record distributors and stores (6951 copies), and radio stations, writers, etc. (692 copies) - is being notified to return it, and that if they don't do so, or if they engage in "distributing, selling, advertising, promoting, or otherwise exploiting" the record, they may be subject to penalties "which may include imprisonment and fines". Once returned, the records will be forwarded to Island for destruction.

All of SST's on-hand stock of the record, in vinyl, cassette, and CD (5357 copies total), is to be delivered to Island, where it will be destroyed.

All mechanical parts used to prepare and manufacture the record are to be delivered to Island, presumably also for destruction. This includes "all tapes, stampers, moulds, lacquers and other parts used in the manufacturing", and "all artwork, labels, promotional, marketing, and advertising or similar material".

Our copyrights in the recordings themselves have been assigned to Island and Warner-Chappell. This means we no longer own two of our better works.

Payment of $25,000 and half the wholesale proceeds from the copies of the record that were sold and not returned. We estimate the total cost to us, including legal fees and the cost of the destroyed records, cassettes, and CDs, at $70,000 - more money than we've made in our ten years of existence.

Our single deals, in part, with our perception of the group U2 as an international cultural phenomenon, and therefore worthy of artistic comment and criticism. Island's legal action thoroughly ignores the possibility that any such artistic right or inclination might exist. Apparently Island's sole concern in this act of censorship is their determination to control the marketplace, as if the only reason to make records is to make money.

This issue is not a contest among equals. U2 records are among the most popular in history: *The Joshua Tree* sold over 5,000,000 copies. Negativland releases usually sell about 10,000 to 15,000 copies each. Our (ex)label, SST Records, is a relatively small, independent interested in alternative music. Neither of us could afford the tremendous costs involved in fighting for our rights in court. Island could. What we *can* do is try to bring as much publicity and attention to Island's actions as possible. This statement, we hope, is a more humane attempt at reasonable

discourse about artistic integrity and the artless, humourless legalism that controls corporate music today.

We've included a small sampling (excuse the expression) from the large stack of legal documents that arrived from Island's attorneys dripping with the unyielding intimidation of money and power. That preliminary stack of documents, 180 pages in all, cost Island approximately $10,000 to produce (ultimately they spent over $55,000 to stop us). Preferring retreat to total annihilation, Negativland and SST had no choice but to agree to comply completely with these demands.

Companies like Island depend on this kind of economic inevitability to bully their way over all lesser forms of opposition. Thus, Island can easily wipe us off the face of their earth purely by virtue of the fact that they can afford to waste far more money that we can. We think there are issues to stand up for here, but Island can spend their way out of ever having to face them in a court of law. So some important ideas about what constitutes art, and whether those ideas can supercede product constraints, will not reach a forum of precedent. In this culture, the market rules and money *is* power. They own the law, and no one who is still interested in the supremacy of a vital and freewheeling art can afford to challenge this aspect of our decline. It is a telling tribute to this culture corporation's obsessions that Island's whole approach to our work automatically assumed its goal was to siphon off their rightful profits. These people lost their ability to appreciate the nature of what they're selling a long time ago.

As you will notice from the ac-

N E G A T I V L A N D

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4   (213) 938-5000

5   Attorneys for Plaintiff GREGORY GINN

6

7

8   **United States**

9   **Central Distri**

10

11   GREGORY GINN, an individual
     doing business as SST RECORDS,
12
         Plaintiff,
13
           v.
14
   DON JOYCE, an individual;
15   RICHARD LYONS, an individual;
     CHRIS GRIGG, an individual;
16   MARK HOSLER, an individual;
     and DAVID WILLS, an individual,
17
         Defendants.
18

19

20

21

22

23   Plaintiff GREGORY GINN alleges:

24

25

26   **JURIS**

27   1.   This court has subject matter

28   under an Act of Congress relating to copyr

companying legal documents, Island is able to bring certain existing laws to bear against our work under the assumption that any infringement of those laws is done for purposes of diverting their monetary return. Our question is: how and why should these laws apply when the infringement is not done for economic gain? For the law to claim that this motive is the sole criterion for legal deliberation is to admit that music, itself, is not to be taken seriously. Culture is more than commerce. It may actually have something to say about commerce. It may even use examples of commerce to comment upon it. We suggest that the law should begin to acknowledge the artistic domain of various creative techniques which conflict with what others claim to be their economic domain. Any serious observer of modern music can cite a multitude of examples, from Buchanan and Goodman's humorous collages of song fragments in the '50s to today's canonization of James Brown samples, wherein artists have incorporated the sound "property" of others into their own unique creations.* This is a 20th century mode of artistic operation now nothing short of dramatic in its proliferation, in spite of all the laws designed to prohibit it. We believe that art is what artists do. We hope for laws that recognize this, just as the dictionary recognizes new words (even slang) that come into common use.

At this late date in the mass distribution of capturing- technology (audio tape recorders, samplers, xerox machines, camcorders, VCRs, computers, etc) there should be no need to prove the cultural legiti macy of what we do with sound.

And this is even more obvious when you look further back. We pursue audio works in the tradition of found-image collage which originated in the visual arts - from Schwitters and Braque to Rauschenberg and Warhol. In music, we refer you to the whole histo

ries of folk music and the blues, both of which have always had creative theft as their modus operandi. Jazz and rock are full of this too. The music business can try to reach the end of this century pretending that there is something wrong with this, or they can begin to acknowledge the truth and make way for reality.

Perceptually and philosophically, it is an uncomfortable wrenching of common sense to deny that once something hits the airwaves, it is literally in the public domain. The fact that the owners of music product and its material distribution are able to claim this isn't true underlines their total immersion in a reality-on-paper. Artists have always approached the entire world around them as both inspiration to act and raw material to mould and remould. Other art is just more raw material to us and to many, many others we could point to. When it comes to cultural influences, ownership is the point of fools. Copycats will shrink in the light of comparison. Bootlegging exact duplicates of another's product should be prosecuted, but we see no significant harm in anything else artists care to do with anything available to them in our "free" marketplace. We claim the right to create with mirrors. This is our working philosophy.

Negativland occupies itself with recontextualising captured fragments to create something entirely new - a psychological impact based on a new juxtaposition of diverse elements, ripped from their usual context, chewed up, and spat out as a new form of hearing the world around us. One of Negativland's artistic obsessions involves the media itself, as source and subject of much of our work. We respond (as artists always have) to our environment. An environment increasingly filled with artificial ideas, images, and sounds. Television, billboards, newspapers, advertisements, and music/muzak being blasted at us everywhere we go (and that background hum of everyday life certainly includes top forty bands like U2). We follow our working philosophy as best we can amid the proprietary restrictions of a self-serving marketing system that has imposed itself on culture. In reality,

that system of ownership is today's emperor's clothes now casually subverted by every kid with a tape recorder. However, as we plunder the ocean of media we all swim in, we believe in artistic responsibility. We do not duplicate existing work or bootleg others' products. We believe every artist is due whatever rewards he or she can reap from his or her own products. The question that must rise to the surface of legal consciousness now is: at what point in the process of found sound incorporation does the new creation possess its own unique identity which supercedes the sum of its parts, thus gaining artistic licence?*

One of Island's objections to our record is the unauthorized use of a *sample* from the U2 song that formed the basis for both of our pieces: I Still Haven't Found What I'm Looking For. We believe that what we did is legally protected fair use of the segment, as it was used for purposes of fair comment, parody, and cultural criticism, which the copyright law specifically allows. A relevant precedent was set earlier this year in 2 Live Crew's Pretty Woman case. The fact is that today there is no operationally workable way to reuse existing sound recordings in collage-based work and see that the original artists are paid for the use of their work. Those artists who only use a few samples and have the time, money, and inclination can have their record companies negotiate payments for "sampling clearances" to the labels that originally released the records containing the desired snippets. But this iscumbersome, arbitrary and expensive enough to discourage advanced sound collage work where there might be anywhere from one to a dozen found sound elements present at any instant, dozens or hundreds over the duration of a record.

So much for content, it is clear that the more significant objection to our single was Island's concern about our cover graphics, which they claimed would cause "massive confusion", resulting in millions of U2

*Oswald, on his "plunderphonic" CD, which went the same way as Negativland's, used on his "Brown" track *only* James Brown samples taken from other people's records, and none direct from JB himself. *Ed.*

* See also John Oswald's proposals on this question (above).

fans buying the wrong record. Does our packaging look like a new release by the group U2? *Yes, of course it does...* But upon closer inspection it reveals itself to be something else. Closer inspection is one of the things we like to promote, while Island appears resigned to the entrenchment of stupidity and the inability of their audience to notice subtle cues such as our name on the cover or our label's logo on the back.

Further, the context in which any potential confusion would take place is a retail record store. The first clue to record store employees would be that our single arrives from SST, not Island, and in small quantities, not the hundreds Island would send. Ours would be located in the "Indies" bins common to most outlets, not the general "Rock" bins where U2 records are found. Ours would be fled under "N", not "U". These logistics aside, let's assume someone does buy our record thinking it's U2's. Does Island really believe that the U2 fan will be satisfied with such a mistake and, returning ours or not, not proceed to buy U2's new record? Accusing us of trying to make money off their name is one thing, but claiming that the money we would make would be money they would

not make is not very realistic. Island's inference that U2 fans might actually assume that we are them upon hearing our record is simply ridiculous on the face of it, and another indication of their lack of respect for their own audience.

As to Island's point about scheduling our single to coincide with U2's new release, we must plead to interesting coincidence. Island should get to grips with the fact that not everybody in the world soaks up every promo blurb that Island feeds to the mainstream rock press. We don't generally read that press and neither knew nor cared that U2 were about to release another chart-busting epic. Our single was scheduled for fall release because our market stems primarily from college radio airplay, and that's when school resumes and the listening population is largest. Fall is also a prime time to release throughout the record industry, which is probably why U2's new record was also scheduled for fall. It seems clear that both Island and SST were attempting to take advantage of the same situation, not each other. As it turns out, U2's release has been delayed until January of 1992, four months after our release date, making any potential confusion even less likely.

So why would we want to simulate a U2 cover if not to swipe some of the big money that this big band attracts? Our real reasons are actually so reflective that they would never cross the corporate legal mind. The image on our cover was U2's namesake, the U-2: a high-altitude espionage plane which, prophetically enough, was shot down over the now-defunct Soviet Union in 1960 causing a huge, meaningless international flap. The only point of light in those dark days was that it gave a self-righteous and complacent America its first clear photo opportunity to catch its own president telling a blatant lie which the CIA assured him was plausible deniability. Our U2 was a spy full of secrets intruding into the self-righteous and complacent image-world of polite pop. We did it as an example of something not being what it seems to be. We did it because we're all subject to too much media image mongering. We did it because tricksters and jesters are the last best hope against the corporate music bureaucracies of good grooming that have all but killed the most interesting thing in popular music - grassroots inspiration. We did it for laughs - listen to it and try not to. We did it so you could read this. The fact that Island Records can't understand

all this, or if they can understand it can't appreciate it, or if they can appreciate it can't allow themselves to acknowledge it, is precisely why they should not have the right to control the life of other people's art.

One basic failing of the U.S. legal system is that it treats the plaintiff and the defendant as though they are equally powerful, regardless of the actual resources each may have. Further, it disregards the fact that the cost of preparing a legal defence for a trial is prohibitively high - unthinkable for any entity other than a wealthy individual or a good-sized corporation. Thus, when a corporation goes after a small business or low-income individuals, the conflict automatically rolls outside of the court system because of the defendant's inability to pay the costs of mounting a proper defence. The matter is resolved by the more powerful organisation threatening to press the suit back into the courts unless the smaller party agrees to their terms unconditionally. The powerful crush the weak. This is a *power* relationship, without regard to the legality of the issue, let alone the morality.

What would be the solution to prevent the cruel squashing of interesting jokes such as ours? How about a thorough revamping of the antique copyright, publishing, and cultural property laws to bring them into accord with modern technology and a healthy respect for the artist's impulse to incorporate public influences? Marketers' constraints should be restrained in cases of valid artistic commentary. This is a huge and complex Congressional undertaking and would inevitably result in sticky legal decisions akin to deciding whether or not a particular work of art is pornographic. So be it. Art needs to begin to acquire an equal footing with marketers in court. We can even imagine such changes extending all the way to recording contracts which, strange as it may seem, might actually be written so as to allow the artist, rather than the marketer, to own and control his or her own work. You might as well start thinking about these problems now because they're not going to go away.

Mark Hosler
Negativland

Digital Technology:
The Next Generation

Michael Gerzon

The next generation of digital audio technology, based on audio data compression, computer data bases and digital communications links, offers an unprecedented access to creative music in the global village. Michael Gerzon attempts to assess the social and musical possibilities of the technology emerging in the next ten years.

It is risky to speculate about the likely effects of future communications technology. However, the technologies now emerging from the laboratories of computer and communications companies suggest that the changes in future technology may have radical effects both on the way music is made and on the way people relate to music. Even if the detailed suggestions here prove in retrospect to be wrong, the very suggestion of possibilities may inspire people to use what is becoming available in ways that might not otherwise occur.

In most of this century, technology has affected music in two main ways. First have been new methods of disseminating music in the form of records, films, videos and radio and television broadcasts. These methods of dissemination have, until recently, been highly capital intensive, requiring expensive equipment, skilled manpower, and elaborate pre-planning and expense of marketing. These methods have led to a relatively centralised music industry, based largely on relatively large record production companies and distribution networks, and centralised radio and TV systems.

Secondly, the technology has affected the nature of musical creation and listening. Nowadays, most music is heard through electronic amplification, much of it without any musicians present, and on electronic instruments that either did not exist before, or have been radically modified from their previous form. Because the development

costs of this technology are relatively high, this has led to a tendency not merely to mass- market instruments (older traditions that musicians created their own instruments, or in relationship to a skilled craftsman have largely disappeared), but to a degree of "simplification" of what instruments can do. In particular, many modern instruments can easily produce music to standard musical formulae with relatively unskilled players, but are very difficult to play unconventionally with a high degree of individuality and skill.

However, the continuing development of the technology is now producing new possibilities that may reverse this trend towards centralised control of music making and listening. This is because the technology is becoming cheaper and more widely accessible.

The Cassette Revolution

The start of this reverse trend was the development of the Compact Cassette around 1963. Originally an extremely low quality medium (very hissy and with nothing above 6 kHz), it used what was then a relatively expensive machine and cassette (in real money terms, costs around 1964 were about ten times higher than around 1990). Its advantage was its enormous convenience and portability. However, with the development of the technology (mainly superior cassette tapes, and to a lesser degree Dolby noise reduction), the quality improved dramatically and costs fell. By the early 1980s, cassettes had practically displaced records in the third world, and were affordable even in very poor third world countries. The ease of copying cassettes on cheap accessible technology largely undermined the record companies in the third world, although cassette's inferior technical quality allowed record companies to survive and

prosper in the west.

In parallel with the development of the cassette, reasonable quality recording technology started becoming more accessible to musicians. Starting with the early TEAC 4-track reel-to-reel machines originally developed for quadraphonic use, home multitrack technology started becoming widely available and affordable by the end of the '70s, largely based on the emerging cassette multitracker. While significantly inferior to commercial studios, the quality was already good enough for commercial releases (as Bruce Springsteen's *Nebraska* album showed).

Today, home multitrack technology has fallen in real-money cost and is now so good that few people could tell from a released CD whether cheap or professional quality studio technology was used in recording - indeed at least one chart album (Michelle Shocked *Texas Campfire Tapes*) was recorded on a *Walkman Professional* portable cassette recorder.

Not only is the recording technology now adequate for commercial releases, but the development of cheap effects units, samplers, DAT tape and computer-based MIDI control software and hard-disc editing have made it possible for the home musician to create at least a fair simulacrum of almost any kind of musical sound he/she wants, including even that of a full symphony orchestra, at moderate cost, and without having to pay for musicians or very expensive instruments.

Indeed, it is common today for classical symphonic composers to write scores on computer equipment to "play" the music on MIDI-CONTROLLED samplers so as to get an idea of what their music will sound like.

Although this revolutionary access to music technology makes it possible to produce music that has

a good "sound" without large financial resources, the technology does have limitations: it tends to sound mechanical, lacking the richness and subtlety of live musicians reacting and responding to one another. This has led to musics that tend to sound somewhat "samey".

In parallel with increasingly accessible music-making and recording technology, the very low cost of cassettes and playback equipment (a cheap stereo personal cassette player can now cost less than a single LP or CD) makes it possible for musicians to send their music to anyone in the world within a few days at a cost far less than the cost of a record.

This has led to the "Global Village" to start becoming a reality, independent of centralised music companies, broadcasting networks or even repressive bureaucracies. In the USSR in the early 1980s, cassette and tape made it impossible for the political authorities to control the dissemination of musics they disapproved of - indeed it is possible that musicians and fans of music in the USSR actually became better informed of many musics than their counterparts in the west, since typically, any western recording that came into a tape swap network would have been copied round the whole network (Which often extended beyond the USSR into places like China) within a fortnight.

Additionally, the falling real costs of international travel have made it far easier for musicians in different countries to travel and work with one another. It is now not uncommon for, to take one example from my experience, Canadian musicians to spend three months in a year in Canada, three months in England, and six months living and working with musicians in Morocco, while recording their CDs in studios in Czechoslovakia! Moreover, this is not simply western cultural imperialism, since the same thing is happening between musicians in different third-world countries. Today, an Oud player in West Africa may well buy synthesiser keyboards and samplers in New York and work with musicians in Peru.

However, in this Global Village of music making, one important thing is missing - information about what is going on. It is probably true that the most creative trends in music today are no longer taking place in large cultural centres like New York, Paris, Berlin or even Kingston, Jamaica, but are scattered across the world in places as seemingly unlikely as Mongolia, Nigeria or Columbia. However, these developments are almost invisible in the mass media (apart from a limited interest in "World Music" largely based on records disseminated through traditional commercial channels). This is partly because the mass media are largely based on traditional centres of power and influence, and tend not to see widely scattered trends, and partly because there is little money to be earned from publicising non- commercial musical activities.

The Information Revolution

The lack of information about what is going on, however, is itself starting to change, thanks to another technical revolution now taking place - the information revolution based on the personal computer (PC). The very idea of a Global Village implies that members of the village should be able to know what is going on that is of interest to them wherever that is. Marshal McLuhan, when he invented the concept of Global Village in the 1960s, envisaged mass media as providing this channel of communication, but mass media suffer from three limitations: they are under centralised control, not that of the end-users; they are generally run for motives of money or power, and finally, it would be naive to imagine that several billion people can all communicate with each other via a relatively limited amount of mass-media space and time. More direct and person-to-person means of communication are required.

The information revolution based on computers has been long-advertised, but it is only now and in the next decade that the promises of this revolution are and will be starting to be fulfilled. This is because only now is computer technology achieving a really useful degree of computing power.

Ten years ago, with the early PCs, the typical home computer had only about 16 KB (16 thousand bytes) of memory. Today, computers typically have about one hundred times as much memory and compute about ten times faster, as well as being smaller and more convenient to use. It is now just about becoming possible to store useful, if still short, lengths of high quality sound and even a few pictures in a PC, but they are still remarkably inflexible. But the increasing power of PCs now makes computers usable for tasks more complex than simple word processing and accounts.

However, even with much more powerful computers capable of processing sounds or high quality video, the data is still not easy to use, since it still has to be transferred onto audio or video tape, just as it had to be for the last forty years or so. The problem is that current telephone lines, which form the only efficient widespread means of transferring data from one individual to another, are incapable of handling the required data rates.

Today, several technical developments are changing this. First, the cost of international telephone channels is falling precipitously (although the charges by international Telecoms have not yet fallen in line with costs), so that within a few years, a telephone call anywhere in the world should be as cheap as calls currently are within countries, with no current limitation in sight to the falling costs.[1]

Secondly, the old poor-quality analogue telephone lines are rapidly being replaced throughout the world by digital telephone lines and exchanges (this conversion process is already almost completed in several industrial countries). Once all the lines (or the overwhelming majority) are converted, the current analogue telephone receiver can be replaced with a digital system. Depending on the country, the

data rate of the digital telephone line is 56 or 64 Kb/s (kilobits per second) as compared to a data rate of 1400 Kb/s for compact disc digital audio or 200,000 Kb/s for a digital video system. Thus although the telephone line is digital, its data rate is far lower than required for current high-quality digital audio, let alone video.

Nevertheless, there is a third technical development - audio and video data compression. This is a technology, originally sketched out theoretically in the late 1940s by Claude Shannon for reducing the data rate required to send audio or video signals based on two properties of signals: redundancy and irrelevancy. *Redundancy*[2] is the fact that not all the information in a signal is completely independent of other information present. By stripping out superfluous duplicated information, the data rate can be reduced - this removes what is known as redundancy in the signals. Secondly, some of the actual information present cannot be perceived by the ears or eyes; such unperceived information is said to be *irrelevant*.

In order to strip out all irrelevant information, one has to have a very good understanding of what the ears or eyes can and cannot perceive, and our knowledge here is still imperfect, although getting better. It turns out that the computations involved on signals to analyse their redundancy and irrelevancy are exceedingly complex, and it is only in the last five years that fast computing technology capable of doing this adequately (if not particularly well) has become available.

The current state of the art in audio data compression is that the data rate of near CD quality stereo can be reduced by a factor 6, although nearly all experts expect a factor 12 to be achieved in the very near future - this still gives a data rate about twice that of a digital telephone line. Two possibilities exist for getting near CD quality via telephone lines: either one can send the signal slowed down by a factor of two, taking twice as long, or one can use two lines. However, most work is now concentrating on mini-mising the quality loss at lower data rates, and many people may well find the degradation involved in compressing the data rate to 64 Kb/s to be acceptable or even barely noticeable expect on the most critical material. One cannot, of course, predict what future further improvement may occur, but it now seems likely that acceptably high quality audio for music may be transmissable down ordinary digital telephone lines in the next few years, for the cost of an ordinary telephone call.

Similar technologies are under development for data compressing video signals, and usable quality may well be achievable via ordinary digital telephone lines, although quality will not be of broadcast standards. Demonstrations I have seen of the most advanced teleconferencing data compression systems achieve acceptable, if still obviously flawed, results via just two digital telephone lines. The future may well achieve significant improvements with the rapid increase in digital signal processing power.

Ramifications

This new technology has some important ramifications. Not only will it be possible to use your PC, with a few anciliary items like microphones and analog to digital converters, as a home recording system (manufacturers are at this moment putting the finishing touches on commercial systems to do this, which are essentially a combination of existing sampling workstation technology, hard disc editing technology and audio data compression to increase recording time by factors of around ten). The computer will also be able to receive electronic mail and access data bases giving information about who is doing what, anywhere in the world, but will also be capable of storing both the music and associated information (notes, documentation, and even associated visual artwork) and of transmitting it to others down the telephone line or of receiving other people's music.

Already, there are plans to computerize the whole of the sound archive material in the USA (about 5,000,000,000,000,000 bytes of audio data!) and make it accessible via data-compressed communications links from anywhere. While such a project will take at least a decade to undertake, it illustrates that the professionals are now taking the electronic global village very seriously, and are allocating funds to its development and implementation.

Such technologies will start emerging on the market within the next year or so (I am writing this in December 1991), in the form of data compression chips, and within the next five years, the basic digital standards for communicating via digital telephone lines should be up and running as commercial products.

Such systems will radically change the way people use and produce music. Rather than send people records or cassettes, the music may well be sent down telephone lines, complete with associated colour artwork, since this will in due course be cheaper than posting a physical object.

Record companies' current problems with piracy and home taping may well become considerably worse once computer-based access to any desired music becomes possible. Presumably, there will be charges made for accessing musical material with one's computer, and the data stream will incorporate copy prohibit codes, or alternatively codes ensuring that any copying automatically causes a charge to be made to the person doing the copying, e.g. to a friend's computer. However, all such copyright codes can be bypassed. (One can now buy products that strip out the SCMS - Serial Copyright Management System - codes from DAT tapes so that one can digitally copy copy-prohibited material).

Besides creating new difficulties for traditional record company copyrights, computer data base systems make it easy for people to communicate their music direct to the end user. While various methods of doing this via data bases are possible, one can envisage two scenarios. First a musician may well market

his music straight from his home computer. This will be practical only if not too many people want his or her music, since otherwise the telephone line would be overloaded 24 hours a day. However, for specialist musics, selling the music to people who want to hear it will be possible using available telephone/computer technology at reasonable cost, with no need to spend money printing record covers, preparing pressings and so forth. Advertising the music will presumably be done by placing information in specialist computer data bases devoted to music, or into electronic mail or computer networking systems. Computer- based systems of disseminating opinions and information are now rapidly growing - especially in the USA, so that the computer will make possible the one-to-one dissemination of specialist information necessary to make the global village work.

For music with much larger followings, home-based systems will not be very practical, since the telephone lines will become overloaded. In this case, centralised data bases, or organised networks of distributed data bases, will presumably be used - for example, the record store might be replaced by a local data base (to keep phone costs down) stocking all the latest popular musical pieces, and making its profit by charging the originators of the music for its services in distributing the music.

Thus, although the role of the "record company" may alter radically in that physical products are no longer being sold, the kind of service it provides may well survive into an information technology era, acting as a kind of distributor, broker and publicist for music available on data bases.

Musical Networking
If the technology develops as I anticipate, it will provide new possibilities for both creating and networking specialist or minority creative musics. Anyone will be able to set up their own music dissemination service, provided the volume of demand for their music remains

small, and will be able to communicate it to others elsewhere in the world. Finding out about, and hearing examples of, unfamiliar musics will become much easier than it has been, since one is no longer dependent on the vagaries of distribution and access to expensive production facilities.

Moreover, musicians in different parts of the world, becoming aware of and interested in each other's work, will be able to collaborate actively with each other via the telephone line, sending unfinished tracks to each other for the other to work on, essentially instantaneously. While this could be (and sometimes is) done at present by mailing tapes, the time lags involved in receiving tapes reduce creative spontaneity in a way that would not occur if one were able to hear the results instantly.

In these circumstances, I would expect musical collaborations involving people from many countries to become the norm, not just the result of special tours or visits, and the process of cross- cultural fertilization currently taking place will be significantly aided. Far from creating a musical uniformity, which is largely the result of the need for easy-to-market products of mass-market companies, I would expect new and original musical hybrids to emerge which strengthen local musical traditions and create new ones.

Current technologies have already caused this to happen. The multitrack recorder has not eliminated, say, polyphonic musical traditions in Nigeria, but instead has created a new music that is both obviously within the traditions as well as using the best and latest musical technologies to excellent and original musical effect - as anyone listening to the indigenous Nigerian releases of King Sunny Ade can attest. Similarly, the electric guitar has not suppressed traditional southern African styles, but has created new guitar styles, notably that of Thomas Mapfumo, extending traditional Mbira styles.

The current excitement about so-called "World Music" using such cross-cultural fertilisations is not a

mere record company marketing fad, but reflects developments in music across the world in response to improved communications and access to new musical technologies. I have become aware of significant numbers of musicians now devoting much of their time to such musical work outside the commercial sphere - varying from Mongolian free improvisers performing in Europe to British free improvisers collaborating with musicians in West Africa.

This kind of collaboration is not new - Ravi Shankar was a pioneer in India of such cross-cultural fusions as long ago as the 1950s, and in the early 1970s, the Swedish alternative music scene, associated with bands such as Archimedes Badkar, Arbete Och Fritid and Samla Mammas Manna, pioneered cross cultural collaborations with musicians from Africa, India and Turkey, as did the German band Embryo and jazz musicians such as Charlie Mariano, Don Cherry and Ornette Coleman. Many of these collaborations were marked by an equality of respect not present in more highly touted examples of cultural imperialism.

Although it is impossible to get any kind of statistics, my impression is that such "cross-cultural" collaboration and networking is very much on the increase, and is arguably the most creative development in music today. Access to affordable and transportable musical technologies has played an important part in this process, and the emerging digital technologies should reinforce it further, resulting in an increasing decentralisation of creative musics, and their removal from the normative strictures of formal musical bureaucracies.

New Instrument Technologies
Besides the improved communications and recording technologies, there are other radical changes occuring, associated with advanced computer and digital technologies, that affect musical instrument design. In the early days of electronic music, it was hoped that electronic technology would allow any sound

to be creatable, so that musicians would have an unlimited pallette of new instrumental resources no longer restricted by the limitations of traditional instruments. Things did not work out that way.

It was found that it was remarkably difficult to use the new electronic technologies to create more than a merely passable imitation of traditional musical instruments, and that the sounds had a distinctively "electronic" character. The new music that emerged, at its best, emphasised this distinctive character, but what it did not do was give musicians unlimited flexibility. Even the advent of sampling, which allows the acoustical sound of the note of any instrument to be exactly reproduced, did not give the hoped for variety of sounds.

Although samplers can duplicate the sound of any one (or any ten) notes of a musical instrument, there are two things that sampling technology is unable to do. First, it can't duplicate the way a sequence of notes on a musical instrument is played one after the other, creating a rigid "feel" different from the original instrument. Secondly, it can't duplicate the way notes vary each time they are played on the original instrument. Even attempts to modify the notes in a semi-random way failed to imitate convincingly the natural variety of the original sound.

Many different synthesis technologies have been proposed, but all seem to suffer from the same problems of being too rigid and inflexible to compete with what acoustical instruments do well. Of course, the best way to imitate acoustical instruments is to play them, but if one seeks to have a wider variety of sounds, the very least one can demand is that synthesis technologies should be able to produce convincingly "natural" sounds, which hopefully then can be extended to interesting super-natural sounds never heard before which sound interesting to the ear.

It is not enough merely to have a technology that can produce useful new musical sounds. One also requires that these sounds be creatable with relative ease. For example, the FM synthesis technology used by Yamaha in their famous DX-7 is capable of a wide variety, but finding and programming these sounds is not at all intuitive or easy - with the results that most musicians restricted themselves to the over-familiar pre-set factory sounds, which very quickly became very cliched.

Experience in synthesis has revealed that most sounds that can be synthesised are really of very little musical interest, and an ideal synthesis will allow musicians to create and use easily those sounds that are interesting without having to explore numerous uninteresting sounds on the way.

An old approach that achieved these ends was that of computer modelling of acoustical instruments, where the computer numerically simulates the physical process of sound production in actual acoustical instruments. The problem with this was that the mathematical equations describing the sound production process are very complicated, and could not be solved quickly enough to produce sounds in real time.

Modern computing technology is still nowhere near fast enough to solve the acoustical equations of actual instruments, but over the last few years, a new method of synthesis based on computer modelling has emerged. Briefly, it has been found that it is unnecessary to solve the complete, and very complicated equations, but that it is enough to represent the behaviour of the air at a few crucial points in the instruments, using an ingenious concept of "digital waveguide" to compute the relationship between these crucial points without computing all intermediate points. While these new computer models are much simpler than the representation of a whole instrument, they give almost identical resulting sounds, with far less computation.

By using this simplified computer modelling approach, it is now possible to imitate the sounds of many natural acoustical instruments on the computer in real time. Unlike samplers, the sound varies in a natural way as each note is played, so that the overall effect is far more "organic" and natural. it turns out that the mathematical equations describing sound production exhibit chaotic behaviour, which produces far greater variations in the sounds than was possible with earlier synthesis techniques.

Besides simulating natural instruments, simple adjustments of the "physical" parameters describing the computer simulation allows the musician to design his/her own never-before-existing instrument, including ones which it would be physically impossible ever to build or play with available materials. Physical modelling synthesis appears to create "musical" sounds much more easily than other synthesis techniques. The main limitation now appears to be that with available computing technology, it is still difficult adequately to simulate natural complex acoustical resonators, such as guitar bodies, so that while it is now easy to simulate, say, a trombone or an electric guitar, the secret of synthesising a Stradivarius violin remains elusive!

While these developments hold out new hopes of more musical and controllable electronic instruments, at present they are confined to use with very expensive dedicated musical signal processing systems, such as one designed at IRCAM in Paris and marketed by *Ariel* in the USA. While there is no logical reason why musical instrument companies should not adopt these new synthesis approaches even in mass-market instruments, using volume of production to bring down costs, at present they seem to show little interest in such new approaches.

However, with the increasing power of PCs, there will come a time within the next decade when such synthesis techniques can be achieved with computer software. Thus, whether or not instrument manufacturers adopt the new approaches, it is likely that they will become available to musicians over the next decade.

Processing Power
While the problems in finding better

methods of synthesis are slowly being overcome, the differences in the ways an electronic and an acoustic instrument are played, and the limitations of the synthesis techniques themselves, will ensure that acoustic instruments retain many advantages. However, by the standards of the last decade, even the available computer and signal processing technology is quite staggering, and in a decade, it will be about one hundred times more powerful yet. Combined with an improved understanding of the synthesis problem, which will allow the available technology to be used much more efficiently, this is likely to reverse the trend of the past decade for electronic instruments and "effects" to become more anonymous and without real musical character.

Although today it is possible for a few hundred pounds to buy synthesisers with hundreds of different sounds and effects units with thousands of contrasting effects, the results still seem rather bland. Paradoxically, by comparison, many of the early synthesiser and effects techniques seem to have had much more "character", possibly due to their imperfections.

The kind of processing power now emerging, however, allows instruments and effects to be devised which are much less limited by trying to squeeze things into a relatively small amount of processing. The problem is already that of having sufficient imagination to use effectively the kind of processing power we will have.

That being said, studies show that to simulate the reverberant character of a room accurately will require the kind of processing power that is unlikely to become available for another third of a century.[3]

Already, the complexity of possibilities of modern musical technology means that most musicians are becoming less performers and more organisers of a musical process. This is most explicitly recognised in areas like Acid House music, where the performance comprises assembling premade musical material into new pieces via record

manipulation and control of sequence. While it is unlikely that such methods will replace traditional notions of musical performance, neither is is likely that they will go away.

Rather, it is likely that increasingly, musicians will both perform and preplan and organise musical processes, often mixing the two, as is the case, say, in areas like Acid House, or in the mixing of drum machine programming and live performance characteristic, say, of Arthur Brown in the early 1970s or Steve Albini's Big Black in the 1980s.

More of this musical organisation is likely to take place using computers, not just for musical production on recordings, where it has already become the norm for many musicians, but also for "performance" music. While the blandness of much commercial musical programming is distressing, the best examples indicate that this is not necessarily a route to unmusicality.

The Future

We are already well along the road to the future described in this article, and it is fascinating, if somewhat fruitless, to speculate where it might lead. Will we be seeing, say, African musicians combining traditional talking drums with elaborate computer-programmes in live performance, with the same musicians doing both? Non-western musicians have so far proved very adept at using new technologies as they emerge to their own ends, with few of the prejudices brought to the technology by many western musicians. What kinds of musicians will work together, and what kind of audiences will they have?

While centralised music marketing will not disappear, the mass media are already fragmenting - for example, the enormous increase in the number of TV and (with Digital Audio Broadcasting) radio channels has already started to cause the major networks to lose viewers and listeners. While this has actually resulted in an increase of bland formula programming, it also is generating new areas in which independent music networking can find

niches.

The new technologies mean that the itinerant musician of previous generations who would travel from town to town is replaced by musicians who will find small but economically viable audiences in the global village. The contacts made possible by computer-based technology will provide an excellent basis for initiating the direct personal meetings of musicians with similar interests in different parts of the world, and create ready-made audiences for musics that in the past would have languished in obscurity.

Notes
1. My information on the falling cost of 'phone lines comes from Financial Times articles on telecommunications - at present, the actual cost is about a fifth (20%) of what the user is charged under current international telecommunications agreements. There is now a great deal of political pressure from independent companies to break these old international agreements between national Telecoms, and most industry experts apparently expect the old agreements between monopoly national telecoms to break down with the next five years. It is considered likely that these agreements may well be tested in the courts and found to constitute monopolistic and cartel practices, especially if not voluntarily altered.
I have not retained any specific reference I can point you to, but the costs of individual lines internationally is still falling rapidly because of improved satellite communications technology, and the rate of fall far exceeds the small 10% or 20% p.a. reductions made by the Telecoms themselves over the last year or so in the face of competition. This current situation is reckoned to be unstable, and at some point in the decade time scale of my article, the price to users should come much more into line with actual costs.
2. The concept of redundancy is central to Shannon's theory of Information, developed in the late 1940s, which is the basis of modern technologies of efficient communications systems. Most information has a recognisable pattern, and isolated errors in that information can be detected and corrected by virtue of the fact that they do not fit this pattern. For example, one could put in errors in an English sentence such as "ThX caX Xat oX the maX" and work out what the missing letters were likely to be. Thus some of the information conveyed in any transmission of information duplicates other information

present by virtue of the fact that the information must form a recognisable pattern.

Shannon recognised that it was unnecessary to transmit all the information present in the original data, but only enough so that the rest of the information could be reconstructed so as to fit the expected pattern, and efficient methods of doing this were devised in the 1950s by Huffman. Such *Huffman coding* reduces the amount of information that needs be transmitted, and a "decoder" at the receiving end reconstructs the original pattern of information from the data-reduced transmission. For very complicated patterns, such as those found in audio and video signals, such coding has only become practical at low cost in the last few years, thanks to fast computer technology implemented on modern digital signal processing chips.

3. This is because a room typically has around a billion degrees of freedom describing its behaviour in the audible frequency range, as compared to the few thousand degrees of freedom available to control the behaviour of the most complicated current reverberation unit. Acoustical systems occupying a volume in three dimensional space are far more complicated than the relatively simple "serial" algorithms (which do first one operation then another on a signal in a sequential - i.e. serial - fashion) used in digital signal processors. For the last forty years or so, the computing power of signal processors has improved by a factor of one hundred in every decade, so that it will take about another thirty years to achieve the same complexity as an actual room.

This complexity of acoustical systems may be one reason why electronic effects and musical instruments do not achieve the richness and subtlety of their acoustic counterpart, and is one of several reasons why for a long time to come, electronics will not displace acoustical instruments.

ULYSSE NARDIN S.A. Le Locle
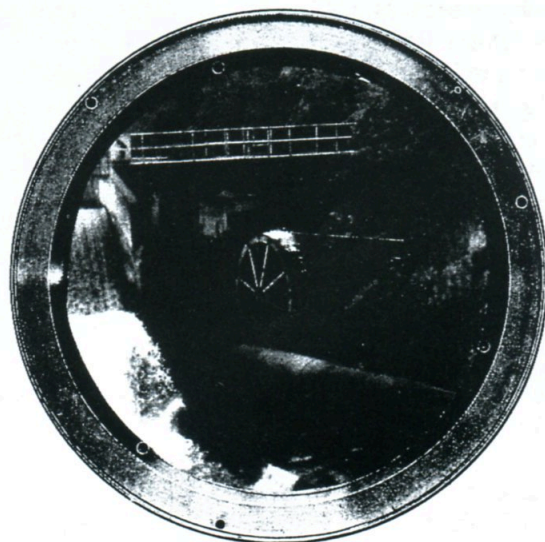
Chronomètre de Marine, grand format

D. = 83,00 mm.

1

PETER BLEGVAD

Bruce Allan
Lightwell 1
137 x 38 x 38 cm
clay bricks, steel linings, daylight
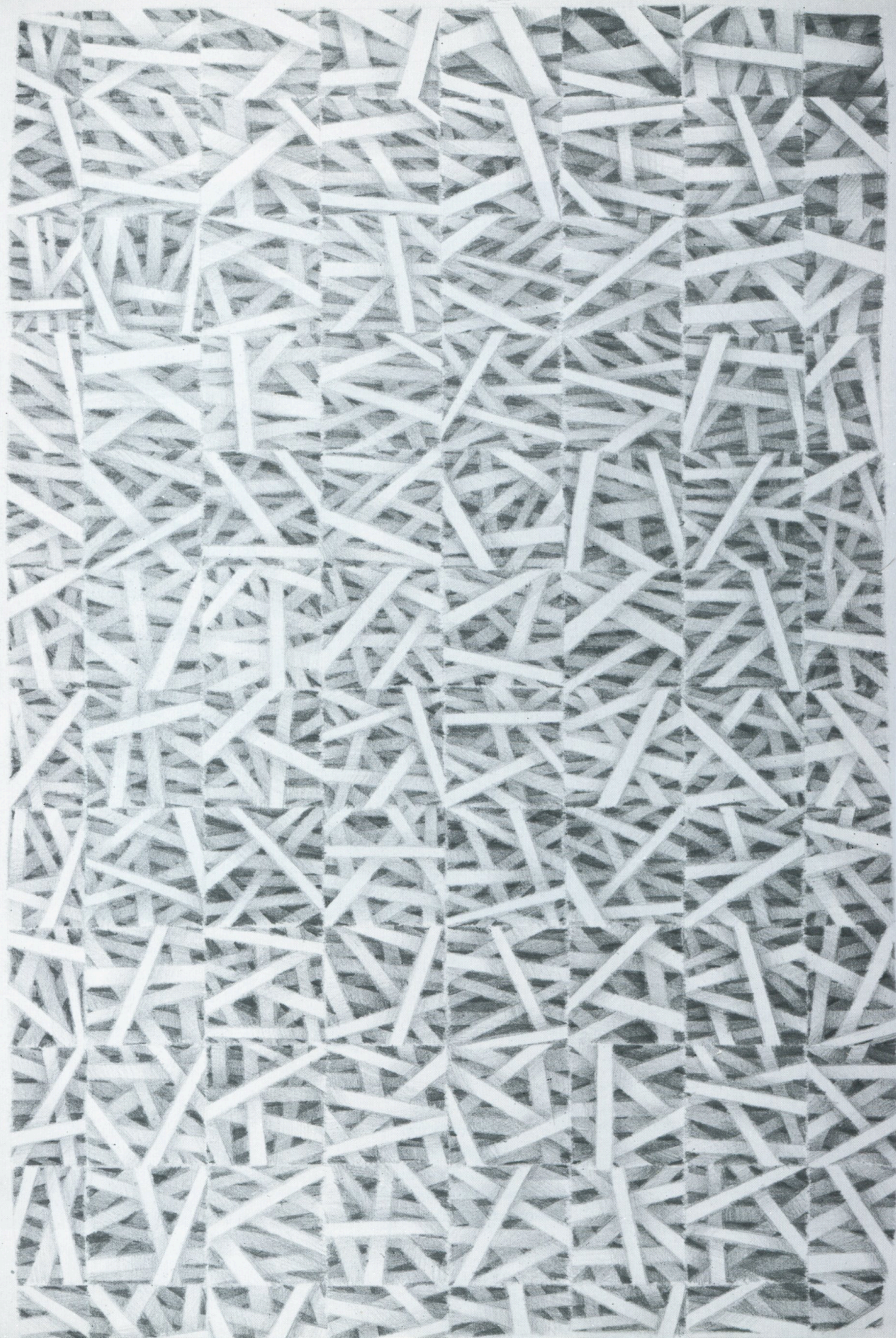*photograph by Karen Antonelli*

Bruce Allan
Lightwell 2
122 x 41 x 41 cm
clay bricks, steel linings, daylight
photograph by Karen Antonelli

Far From Equilibrium
Paul Pignon

1: Foreword - and some debatable assertions

This is an attempt to clarify what kind of mental activity is specific to improvised music-making, taking it to be empirically established that some free improvised music is experienced as being unique in relation to all other musics. In my experience this uniqueness is also significant and worthwhile.

For some time I have been preoccupied by thoughts about what improvisation is and where it can and should go. By this I do not mean what kind of principles and formalisms one should try to incorporate but, on the contrary, what kind of mental states and processes one should try to cultivate in order to produce music without reference to principles and formalisms.

The creation and reception of art involve the mind in more ramified and comprehensive activity than any other mental discipline. They are furthermore non-goal-oriented, unlike the vast range of goal-oriented forms of mental process of which our minds are capable. One might even say that art is *any non-goal-oriented mental activity manifested in communicable form,* and that it is an accidental byproduct of nature's "overkill" in the otherwise goal-oriented development of human brain capacity. If a goal can be identified, it's not art any more. It seems to me self-evident, therefore, that no other mental discipline can be applied to analyse what art is, how it is or should be (!) produced, at least not in any essential way, simply because whatever features in art and its production one can identify, one cannot evaluate their contribution to achieving a defined goal, since there is none. I find attempts to apply methods of mathematics and the natural sciences in this way evidence of a pompous naivety in minds with insufficient insight into the nature of the art and/or the science they are considering. So-called applications of information theory to art analysis are a glaring example.

I often find, however, that reference to *models* from mathematics, natural science or engineering can provide a welcome handle by which to grasp and give form to otherwise elusive intuitive mental images of what is actually going on in the production and reception of art. One cannot *deduce* anything from these models which is not already empirically experienced "in the field", and one must be wary of deriving goals from them, as though they were explanations in the scientific sense.

In what follows I shall draw heavily upon analogies with recent advances in the thermodynamics of chemical systems, and upon models of how the mind is organised as formulated by Minsky, in an attempt to project a communicable image of what I sense to be going on when the improvised music I experience as unique is being produced, and what makes it different from goings-on in other kinds of artistic creativity.

2: Far from Equilibrium

"Self-organisation processes in far-from-equilibrium conditions correspond to a delicate interplay between chance and necessity; between fluctuations and deterministic laws."

Far from equilibrium is a term I have borrowed from the intriguing book, "Order out of Chaos" by Ilya Prirogine and Isabelle Stengers. This book has been for me an abundant source of ideas, food for thought, and above all analogies which I find invaluable in giving form to thoughts and intuitions about artistic creativity in general, and in particular about the specific nature of free improvisation. I shall also lean heavily own ideas drawn from Marvin Minsky's famous book, "The Society of Mind".[1]

As the expression "far from equilibrium" will crop up very often, I abbreviate it to FFE.

Thermodynamics, along with quantum theory, is perhaps that realm of scientific study which has given rise to most metaphysical speculation. Classical thermodynamics is chiefly concerned with equilibrium states and how systems tend towards them; after a perturbation such systems will settle back to the equilibrium state they were disturbed from - or to some new equilibrium if this has lower energy. The equilibrium state is a kind of *attractor.*

If such a system is forced far away from its attractive equilibrium by a steady supply of energy or matter from the external world, it would be expected by classical thermodynamics to stabilise in a state of maximum entropy (disorder) and minimum free energy. Systems have been discovered (fairly recently), however, which do not behave in this way, but when far from equilibrium begin to exhibit unstable self-organising behaviour, often of astonishing diversity, evolving in both time and space. The discovery of such behaviour seems to demand a fundamental reappraisal of our understanding of nature, and this is one of the central themes of Prirogine and Stengers's book.

"In this context, the age-old problem of the origin of life appears in a different perspective. It is certainly true that life is incompatible with Boltzmann's order principle but not with the kind of behaviour that can occur in far-from-equilibrium conditions."[2]

Intensive research is now going on into such systems on many levels, from the elementary physical to the complex biological and sociological.

However, a necessary feature of all such systems is that they embody "catalytic loops", which in terms of chemistry means that the product of a reaction is necesary for its own synthesis. This is analogous to what would be called "positive feedback" in control theory and electronics, typically giving rise to unstable be-

haviour, which may or may not be self-organising depending on the nature of the system. In fact, in the world of cell chemistry, where FFE self-organisation seems to be the essence of life itself, these catalytic loops are often more complex, e.g. process 1 produces molecule A which catalyzes process 2 producing molecule B which is necessary for process 1 to produce A...

Another crucial feature of such FFE conditions is the occurrence of *bifurcation points*, critical stages from which the system may take one of two (or more) trajectories with radically different outcomes. At such points the system is enormously sensitive to small fluctuations and influences which may steer it into very different behaviour. This is again quite foreign to classical thermodynamics where small perturbations are expected to have only small effects which quickly die out. This could mean, for example, that even such feeble influences as gravitational anomalies or weak electromagnetic fields could profoundly alter the behaviour of organic systems, influences which are otherwise considered so weak as to be quite negligible.

Prirogine and Stengers also refer to such systems as dissipative structures, dissipative because they need energy or matter from the outside world to maintain their untable behaviour, structures because their behaviour is nevertheless organised.

3: FFE mind
Consider the situation: one or more musicians say, "We are going to play, but we have no idea what, absolutely no feature of the music has been decided in advance, not harmony, melody, rhythm, dynamics, form...". Can we perhaps see the processes giving rise to this music as in some way analogous to the unstable self-organising behaviour of some FFE systems?

The unstable system, the dissipative structure we are looking at here is of course the mind(s) of the performer(s).*

* The body is of course involved, and it is questionable whether any distinction

Consider the mind in the terms Minsky describes. A neuron has no intrinsic intelligence, but there are about a billion of them, linked by complicated networks into groups, and groups of groups, and... into *agencies* networked to other agencies, a vast vertical and horizontal hierarchy, *the society of mind.*

Both through inherent properties and through learning, these agencies diversify and have access to special knowledge and skills. As in macroscopic diversified societies, decisions about actions and reactions towards the outside world "are taken" either by a consensus consigning responsibility to certain members (agencies) whose claim to special abilities or knowledge is accepted, or by the resolution of inter-agency conflicts.

4: Temporary madness
In everyday life the mind is supposed, at least in its dealings with the outside world, to behave like a near-equilibrium system in the sense of classical thermodynamics. Inter-agency conflicts must be resolved decisively, whether by democratic or autocratic means. In particular situations, identified by comparison and recognition agencies with access to memory, certain action agencies will be allowed the upper hand in responding because of their claim to special relevant knowledge. Even if driven far from equilibrium, the mind is expected to be able to return to some stable state allowing a goal to be formulated and appropriate action taken. Displacements from equilibrium caused by perturbations should decay, allowing a return to a stable state. Otherwise our behaviour will be seen as insane or at best inept.

But suppose we can achieve a state which is far from any equilibrium, where a catalytic loop can give rise to instability, a dissipative structure which has self-organising behaviour and is, at least intermittently, enormously sensitive to minute influences. I can imagine such a state of mind when as many agencies as possible are given "equal powers" in

a kind of controlled anarchy, where no recognisable goal-formulation is allowed to establish a hierarchic pattern - temporary contained madness. Obviously if we are to make music it must be contained in some way for certain control functions must be maintained in a most efficient manner. The situation where "too many" agencies are simultaneously vying with each other for control, but none gaining it for long, can be a model of the kind of unstable system we have been discussing.

As regards an energy flux which maintains this unstable state, here too one can sense an analogy with the FFE thermodynamic model. Creative energy may be hard to define, but it is something every creative person has experienced at some time or another. We can interpret it as a source of excitation for the agencies most engaged in the mind's activity at a given time. What is special in the unstable FFE state we are concerened with is that the energy flux is *distributed*, not focussed on one agency with a dominant role, so that it maintains the 'equal footing' status of as many agencies as possible.

What we have described so far could be the temporary insanity of many forms of creative activity.

5: The catalytic loop
"...the only reaction stages that, under certain conditions and circumstances, may jeopardise the stability of the stationary state are precisely the "catalytic loops" - stages in which the product of a chemical reaction is involved in its own synthesis."

Nowhere is the product of artistic creativity so much involved in its own "synthesis" as in (free) improvised music. The musician's mind has immediate reference to the music just played, and in the absence of a goal-oriented supervisor agency is very strongly influenced by it - the music catalyses itself.

6: Instability. Sensitivity. Learning not to learn
By being able to achieve an unstable self-organising FFE state of mind

between mind and body is meaningful here, but for simplicity let us for now

view it as a tool, together with an instrument, under the control of the mind.

the improviser can be creative in an essentially different way. As we have said, such FFE systems can be extraordinarily sensitive to the smallest influences, steering them off into new behaviour in radical contrast to stable systems disturbed from equilibrium, with their tendency to be drawn back to an *attractor* state.

Can one learn to achieve such unstable FFE states, to practice insanity, or to preserve the capacity for it? Is it not a case of (selectively) learning not to learn? Objection! This sounds like a goal-oriented activity, but the goal is to avoid goals, and it refers to the way an improviser "practices", not to actual performance. This striving for a non-goal begins to sound almost ephemeral, or zen-like, but I believe it is crucial to the improvising art.

John Cassavetes has said: "You have to fight sophistication. Sophistication comes to anybody who has been doing his job for a while. You have to fight knowing, because once you know something, it's hard to be open and creative; it's a form of passivity - something to guard against." Those who know Cassavetes's films and especially who know something about the way he works, will appreciate that this statement originates from experience in a cognate activity.

One of the pitfalls of free improvisation is learning, which our minds are so good at. Whatever we do, especially if we do it often, certain agencies observe and store information about what was done, along with an evaluation of the results. When a similar situation arises again, these agencies tend naturally to take the upper hand, trying to reproduce what was done before if the results were judged good, or to avoid it if they were not. I have observed with many improvisers who play regularly over a long period that one begins to hear *attractor states* making themselves felt, or energy troughs into which they slide. The mind's natural tendency to establish a stable, goal-oriented hierarchy of agencies is easily reverted to. One cannot disregard the fact that improvised music does come within the realm (albeit on the fringe) of

"show business" with its concommitant evaluation norms to which no performer can be fully immune: success is measured by an ability to manipulate and captivate an audience, to win the greatest possible approbation from the greatest possible number. There will always agencies in the mind which will claim control on the grounds of knowledge about how to achieve this goal.

I imagine anarchic insubordinance of as many agencies as possible to be a prerequisite for getting far enough away from equilibrium. I have written elsewhere about free improvisation (at its best) as "music of the whole mind", an exaggeration justified by its suggestive implication. On the other hand, learning is intrinsic to our mental development and without it even improvisation would stagnate in its idiom. As much of the mind as possible should be engaged in the dissipative structure, which includes tapping knowledge which would not normally be permitted to come into play in a more stable and hierarchical creative activitiy. Learning also develops new agencies and modifies inter-agency networks. The danger lies only in learning *about how to play* in the kind of way we learn how to eat with chopsticks or impress another person with a certain image of ourselves.

Recently I heard [Raymond] play at a concert - wonderful music. I told him so afterwards. He said, "I have no idea what I did". This is not uncommon with improvisers when they are at their best, whereas if we have played something learned, something where a goal-oriented agency was in control, we also remember rather well. My experience suggests that when the mind does achieve unstable self-organising FFE behaviour, the monitoring agencies concerned with remembering, collating and evaluating information about current actions for future reference tend to be suppressed. A parallel with attempts to recall dreams springs to mind. The dream state may be cognate as another unstable self-organising FFE state of mind during which goal-oriented

agency configurations are "turned off".

7: Some comparisons - jazz, composition

As I have been talking about the uniqueness of the way the best improvised music is created, it behoves me to explain what I think goes on in some other forms of artistic creativity.

In any discussion of improvised music some reference to jazz improvisation almost always crops up, for obvious reasons.

In a conventional jazz improvisation there is always a reference frame, a stable "ground state" or attractor, from which the performers make excursions but which they do not destroy. The reference frame is always in the player's mind. That is to say there are certain agencies which "know what the rules are" - which supervise the flights of fantasy other agencies may put forth. The learning is there, and the heirarchy of control which it engenders, and thus the stability, the near-to-equilibrium behaviour of a classical thermodynamic system. Some of these "knowledgeable agencies" lie very deep, at an almost purely motoric level - the well-learned licks which are guaranteed to work when brought in at the right place. All in all, there is a team of supervisor agencies which ensure that unstable FFE conditions are suppressed.

I have experienced many times the fatal effect of any kind of previously decided framework on free improvisation. What happens is one of three things: in the best case a supervisor agency is established which imediately aborts self-organised FFE behaviour, and instant composing (see later) results; or, the agreed framework is rejected because everyone senses that it is stifling the music; or, there is an unresolvable conflict between these tendencies leading to plain disorder (a stationary state of maximum entropy).

In *composition* on the other hand there is first of all no catalytic loop (or does this invite refute?). In any case, if the composer avails himself of all-embracing organisational prin-

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ciples in composing it is clear that no unstable FFE state can arise. It is questionable whether it can ever arise given the opportunity for reflection and contemplation which composing allows. Interagency negotiations are bound to take place, leading to stable (sane?) decision-making. It may be that a composer working in a very intuitive and spontaneous fashion experiences bursts of a "creative insanity" similar to that of the FFE improviser, but the other factors I have mentioned must take over before his mental trajectory is ever mapped to a listner's mind. Another important point is that very little of the total information reaching a listener can in fact be controlled by the composer (of notated music).

8: The critical size - and Instant Composition

There seems to be a critical size for an ensemble of (human) minds trying to achieve self-organising FFE instability together. It is 3, maybe exceptionally 4. Five to eight seems not to yield anything satisfactory in terms of improvisation, just rather stable high-entropy stationary states. With larger numbers (if all goes well) something different happens - this is the "free big-band" situation. Improvisers with experience in this kind of ensemble don't try to achieve FFE instability, but do set up a monitor-supervisor agency which tries to see to it that the player makes the "right" contribution to general ensemble gesture. What each musician plays in detail can and should become a rather secondary consideration: it just has to be the "right kind of musical element". This then becomes very similar to the way many modern composers work, with "material", defined only on a fairly macroscopic level, and results in something for which I would reserve the term instant composing.

Note that instant composing often occurs even in small ensembles; it is a way out when an unstable FFE state can't be achieved or doesn't seem to be self-organising.

9: Instrumental technique

Improvisers play for the most part instruments (or voice) which are common in other kinds of music too - classical or modern Western notated music, jazz, folk music, etc. What sort of technique does or should an improviser have in comparison to what is required in other musics? This is a somewhat vexed question, particularly when comparison is made with the demands of academic training for Western notated music.

First let us note that even in composition, the creation of art, is not a goal-oriented activity, interpretation of notated music is. The performance of "strictly notated" music can be rated in much the same way as a marksmanship sport. Crudely put, the better player plays fewer wrong notes, though the "rating system" extends to much more than this. This is not of course the whole story, but it is a major part of learning to play notated music. Outstanding performers of notated music are often hopeles at free improvisation: they seek always a framework of principles so that a supervisor agency can establish its right to decide what is "right", which is fatal for an unstable FFE state. At best what results is instant composition.

On the other hand, outstanding improvisers may be paralysed when required to play notated music. The academic musician is able to establish the agency hierarchy necessary to achieve the goal of "playing the right notes at the right time" as an almost automatic background process, leaving other agencies free to devote attention to interpretation (or even thinking about what to have for dinner), improvisational excursions about an equilibrium state. This may be an insurmountable problem for the free improviser with completely different habits of mind.

To play notated music, or "mouldy fig" jazz, the performer *has to* be good at certain things with his/her instrument or voice. To be a good improviser one does not have to be good at anything, but *must be good at some things*. Some kind of good, or even virtuoso technique is essential, because it forms a link in the catalytic loop: mind-instrument-sound-hearing-mind. The improvisation *is* the performance *is* the art and is *not goal-oriented*, so it cannot be rated in terms of instrumental technique, though it is intimately dependent on some kind of technique.

When a note-interpreting player accidentally makes a mistake (easy to identify as such), his/her repsonse (goal) is to rectify it as soon as possible, to get back to equilibrium. In an improvisation it is often difficult to identify what *is* a mistake, but more important, an accident may be the initiator for a new trajectory, a *bifurcation point* in the unstable FFE state. For this reason it is usually an advantage if the improviser is skilled in using the instrument in unconventional or "wrong" ways.

The crucial difference between note-reading and improvising musicians would however appear to lie in different mind-structuring abilities. There are of course musicians who are good at both. But also note that the improviser is 100% dedicated to creating art, whereas the interpreting musician is for the most part engaged in a highly goal-oriented activity.

10: That's all very well, but what about...

music which is very "composed" but which a listener experiences as very suggestive of free improvisation? Some of Ferneyhough's solo pieces come to mind. Much depends on how the performer approaches the notation...
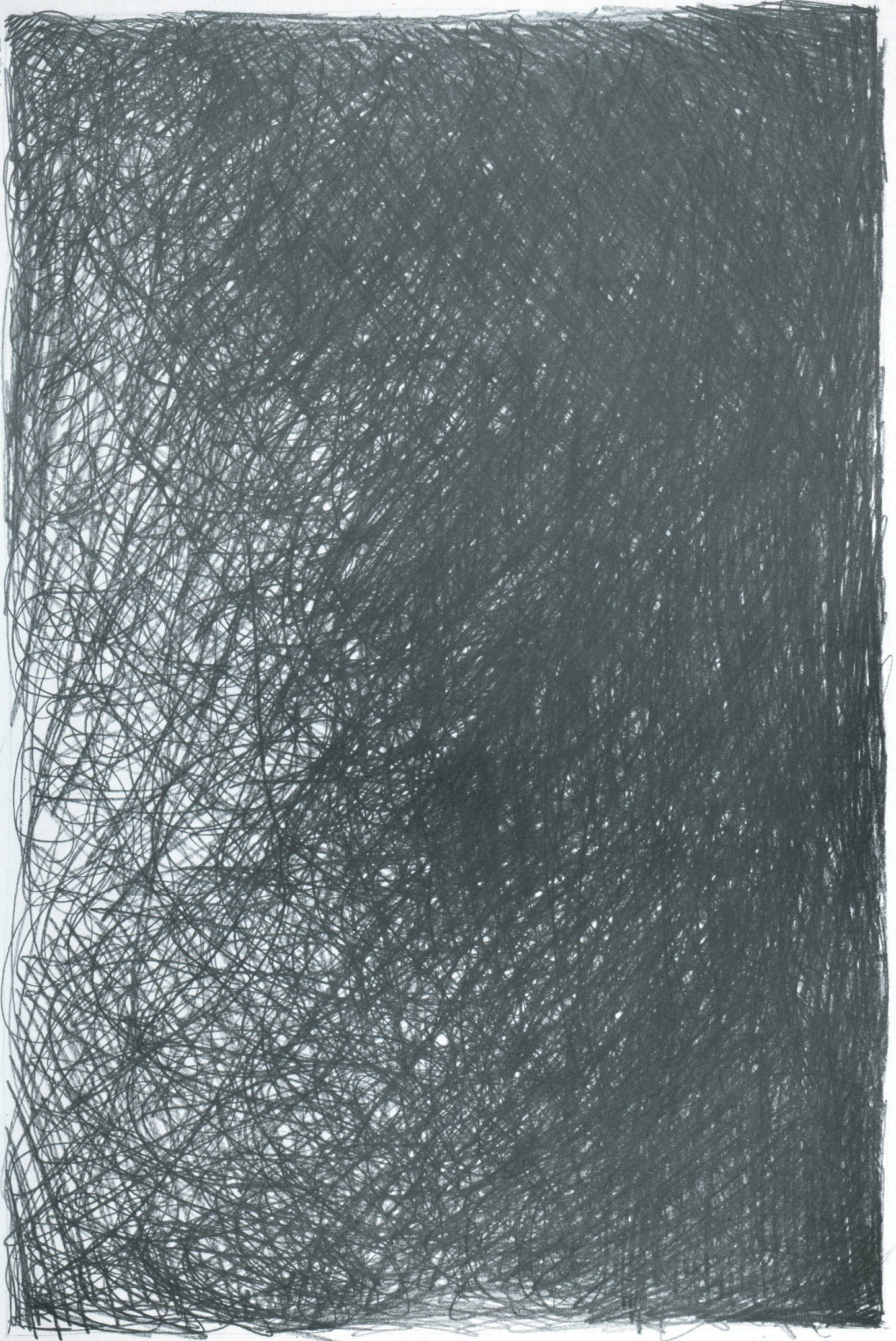
Can one envisage self-organising unstable FFE behaviour in an artifical intelligence?

I leave these topics in the air for further speculation.

Notes:
1. Agencies
The term agency is taken from Minksy's "The Society of Mind". Minsky describes the mind as a vast hierarchy of component *agents*, linked by numerous vertical and lateral connections. At the lowest level we have the brain and nerve cells themselves, extremely primitive agents. Further up the hierarchy we have the agents with simple skills or abilities. Still further up, ensembles of agents with a high level of autonomy and administrative power over many lower agents, which Minsky calls agencies. They could be described as "member minds" in the society of mind. For example, when we say "I can't make up my mind," one can interpret this as a conflict between agencies which both consider themselves competent in the given situation.

2. Boltzmann's Order Principle
To illustrate this principle, consider a very simple example: an insulated vessel contains gas or liquid, billions of atoms. Suppose that initially they are ordered into some kind of distinct pattern. After a time, the system will evolve to a uniform distribution of the atoms throught the vessel. In Boltzmann's analysis, this is explained in terms of the probability of different states. All possible states ("complexions" as they are often called) are equally probable, but in systems containing very large numbers of elements, there are vastly more possible states corresponding to a more or less uniform, featureless distribution than to any other kind. To quote Prirogine and Stengers, "Once this state has been reached, the system will move only short distances from it, and for short periods of time... (it) will merely fluctuate around the attractor state." Any initial dissymmetry or special distribution will be "forgotten".

Notes on the illustrations :
On the one hand my stuff is all about FFE creation; on the other, in order to illustrate FFE, you have to stop doing it. A visual FFE is non-specifically specific, or specifically non-specific; something "real" that does not exist... a nice cow or bunny would have been easier...
Bill Ellsworth

AAD - ADD - DDD
Remixes: cosmetics or fraud?
Guiseppe Colli

Bit by bit CDs have replaced vinyl records as the most common means of sound reproduction. One positive consequence is that, since it is suddenly profitable, long out of print titles are once again available - both for first time buyers and fans who want to replace their scratched worn copies. In the last few years richly annotated boxes have appeared, offering "best of" collections and a "superior sound".

In some cases the new editions weren't exactly as I remembered the old, and a careful comparison led me to the conclusion that, in a continuum going from light modification to total change, the correspondence of new to original editions is an unknown quantity that can only be discovered on a case by case basis.

In this article I'll consider this "fact" as a "problem"; I won't talk about whether CDs are "superior" to vinyl (Grundman and Ludwig think the opposite is true: see note 9).

The only definition we'll need is "mixing"; mine is: a complex operation, made of a series of simpler operations which tend both to modify the timbre of sounds and to determine their relative volumes and spatial disposition. Mastering is the operation necessary to prepare a CD from an analogue tape. This is the minimal necessary intervention required to produce on CD material previously released on vinyl. It consists of converting analogue to digital tape (hence "digitally remastered"). This is the first stage at which problems appear, most commonly: 1) the increase of tape hiss (no longer hidden under the surface noise of the LP) and 2) an excess of bass frequencies since these typically were boosted when mastering for vinyl - to compensate for the lack of "receptivity" in the old format. Therefore active intervention is required just to "leave things as they are".

The ways in which available options are applied gives form to what we hear in the finished product, which will differ in direct proportion to the "innovative" nature of the analogue-digital mediations applied: for instance, modern equalizers give the possibility of selective modification at a level similar to a remix (for now I leave this concept in its intuitive form).

A few examples. First, the Rolling Stones[1]. Andrew Loog Oldham, the Stones' first producer, was chosen by Abkco US to supervise the CD edition of the group's first 15 albums* (an edition which is different from the European Decca versions). Oldham was as faithful as possible to the originals, making no dramatic changes; nevertheless, the simple process of remastering entailed a change in the stereo separation, modifications to the vocal levels and the apparent disappearance of some instrumental parts. The fact that the new versions are clearer hasn't always been beneficial to the musical content; for example, "Street Fighting Man"* digitally remastered on "Through the past, darkly" (London/Abkco USA pressing); and on "Beggars Banquet" (Decca, Dutch pressing) reveals its acoustic nature, whereas an aspect of its original appeal was its not clearly defined guitar timbre.[2]

Greg Calbi, who remastered "Sticky Fingers", "Exile on Main Street", "Some Girls" and "Emotional Rescue" for Columbia said, "When somebody buys a CD, the first thing they expect is more dynamic range than on disc, so why transfer the same sound to CD?" This sentence will be useful later.

For The Beatles reissues, the EMI "Beatles Committee" appointed George Martin to prepare the digital versions. Martin persuaded them to use mono versions of the first two albums and stereo versions of "Help!", "Rubber Soul" and "Revolver". Since the original stereo wasn't considered good enough by today's standards, Martin took the original 4 track tapes and remixed them. ("Revolver" and "Sgt Pepper" were not remixed).[3][4]

So now is the time to look at the question of remixing, which means, simply... doing it again. How could we call a remix "illicit"? Some common points of view seem to be: A remix is legitimate 1) when the artist or original producer do it (answering the question: who?); 2) when the artist or original producer wants to make up for lack of time, hardware or experience at the time of the original mix (answering the question: why?). From my perspective, which is strictly philological, the answer is: it is legitimate when it was done at the time, answering the question: when? As an example of this, I offer the LP "In the Land of Grey and Pink" by Caravan. For some tracks, both a mixing and a remixing engineer are listed on the cover. We can suppose the first mixes were rejected. It doesn't matter why here; important only is that the decisions and remixes were made before the record appeared before the public.

At this point a question is always asked: why deny musicians the possibility of modifying - by remixing - their own work? My answer is: they may, but then they must write very clearly on the cover: Edition 1991. Moreover, the new edition must not replace the original. If we don't satisfy the first condition we create the possibility of fraud; and if we fail the second and the original version is not on sale anymore, it will make a critical evaluation of the work (i.e. to see that work as part of its time) impossible.

So far, so good. Now to distinguish "remixes with" from "remixes without" the addition of new material. Only in the last decade have remixes which replace instrumental parts (in some cases everything, except vocals) become commonplace. This now includes adding parts that were not present on the original track at all. The first remixer to become widely known was Arthur Baker, who remixed, among others, records by Springsteen, Diana Ross, Cyndy Lauper, Hall and Oates. The main reason was that audience segmentation made it desirable to offer different versions 1) to different audiences, and 2) for different uses.[5] We can see both aspects, for instance, in CD versions of some of Frank Zappa's historical records; but first let's answer an important question: does a criterion exist by which we can tell an original version from a remix? Yes and no. For music which predates the 70s we can be pretty sure: a CD which hasn't been remixed will have on its cover the triad AAD; if it has been remixed, ADD. The criterion becomes less certain as we approach the 80s, and for the 90s is totally useless. What's more, we have to consider that vinyl records lack the triad, so it's impossible to tell one edition from any other, unless the buyer takes the CD version as a reference point. What the

"D" in the central point in the triad cannot tell us is whether the remix is of the "with" or the "without" (new material) type.

Now we can take a look at FZ's CD rereleases in a comparison with original vinyl copies in mint condition. "Freak Out", "Absolutely Free" and "Waka/Jawaka" (Zappa Records), "Weasels Ripped My Flesh", "Chunga's Revenge" and "The Grand Wazoo" (Rykodisc), all conformed to their originals, coherently with the triad AAD. "Uncle Meat" (Zappa Records) is practically the same, even if it has ADD on its cover. "Hot Rats" (Zappa Records) has ADD on its cover: "Remixed from the original multi-track masters with added material from the original sessions"; it's an alternative version, but, alas! it's the only one on sale. The real problems arise with "Cruising with Ruben and the Jets" and "We're only in it for the money". The first (Zappa Records) has a new double bass on some tracks, a new electric bass on others, and new drums; the triad ADD, as we've already seen, doesn't warn us; nor is there any indication on the cover; nor do we get even to know the names of the new players. "We're only in it for the money" (Rykodisc), in my opinion one of the most innovative records of the sixties, goes further still; again, we have new bass and drum parts throughout, and the effect is quite repellent. Yet the triad on the cover is AAD. A little note in the booklet tells us the record has been remixed: too late for even the most scrupulous buyer.

Zappa has tried to give technical justifications for the alterations, but his explanation doesn't hold water: the overdubbing of new material is always a deliberate decision.[6]

One last example: "In Praise of Learning", the third Henry Cow LP. I compared the CD with two vinyl copies, the original on Virgin (an unplayed copy) and the 1986 Broadcast version. Let's consider the long track on side one, "Living in the heart of the beast". The version remixed by Frith, Hodgkinson and Bisi is "clearer" than the one on the first edition, which, in truth, appeared a bit muffled even when it came out, but the composition takes on, for me, a threatening, harsh, and anxiety-provoking character that the original version didn't have. This remixed version seems to anticipate (and never a word was more inappropriate) an approach and a sound dimension typical of the end of the 70s, more like The Work, if you like, than the original Cow. Even if to somebody who hadn't previously listened to this composition the new version could appear more "modern", philologically

it's totally misleading. Unfortunately it's the only one now available.

Practically every day remixed versions of old titles appear. Since a remix costs money, most are left alone. Nevertheless, if somebody were engaged in writing a history of rock and used CDs he would have a certain amount of misinformation and may be unaware of the fact.

The problem I'm talking about hasn't been perceived as being important by many; there are, of course, those who have noticed that record x had been remixed and paradoxically this is sometimes perceived as a positive quality. But the attention this question has received is nothing compared to that reserved for "the death of vinyl", to which remixes form in a way an appendix. Obviously no one can accuse the public of being superficial; typical situations are: 1) first purchase, therefore not comparable and 2) substitution of a worn-out copy, sometimes not listened to in years; in which case the listening experience, from a hi-fi point of view, will be more satisfying (just remember the Greg Calbi quote).

Some time ago I began noticing a certain disparity between the rock critics' and the jazz critics' behaviour with regard to our present problem; everybody recalls, for instance, the fury which the soundtrack from "Bird" unleashed (a "modern" production had taken out all Parker's companions in favour of some session men).[7] One could argue that, since he is very well known, Parker's name is not representative; I'll remind the reader, then, of another controversy: that concerning noise reduction systems used when transferring "Historical jazz" to CD. The debate was long and heated, and definitions like "colorization of music" appeared, in analogy with the colorization of old black and white movies.[8]

So I ask myself: why this difference in attitude between the two categories of critic? I asked other people, and here are the answers (in precis):
1) Rock critics are, as a rule, ignorant, and not at all conscious of the majority of the problems concerning music.
2) Rock critics tend not to talk about problems which they assume will be difficult for their readers to understand.
3) Rock critics have a tendency to be uncritical about recordings since, although in jazz they are considered to be evidence of a performance, in rock they are only evidence of themselves.

Each of these answers, I think, seems to have a dose of truth. I'll add this: by betting on CDs the record industry (be-

side the novelty value) has "discovered" a quality which is decisive in the orientation of the purchase: a mass-level hi-fi, i.e. hi-fi at a low price[9]. By the same token it would be commercially unsound to reprint old records without having done everything possible to make them sound like records today. Preferring the original to the remix implies an understanding that the latter, even if it is on the surface, more "faithful", nevertheless betrays the music, i.e. that the sound measured in dynamics is not the same as the sound as a result of creative invention.[10/11] Thus, I'll add a fourth sketch of explanation to the three already mentioned: the majority of rock critics share with the public an appraisal of a "good sound" as a positive value in itself.

In closing I'll quote Roger Nichols, an engineer for the group Steely Dan (a group which was surely not guilty of making shoddily recorded albums): "I remember mixing the tune "King of the World". Everyone else went home, Gary Katz fell asleep on the floor and Denny Dias and I stayed until seven in the morning, doing it in little sections, getting the balance between all the instruments perfect, then on to the next section, all of it perfect. Then we spliced the 2-track master sections together, which is how we used to mix down before we got the Necam digital mixing system. The next afternoon we came to the studio and played it back: the song started and then the fade came. We went, "Wait a minute. Did we leave something out? What's going on here?" And we played it back again and we had to really concentrate to realize the song was going by. You could hear everything and you couldn't hear anything, like sonic wallpaper - really strange. We ended up using the mix we'd done ten hours before, which had more three-dimensionality to it."[12]

Notes:

1. News and quotes from Scott Isler, "Rolling Stones on CDs: you can get what you need", Musician no.102, April 1987.
2. An example of good ingenuity, two acoustic guitars and some toy drums were recorded with no limiting, all distortion; the only electric instrument, a bass, was overdubbed. See Scott E.Kutina, "Keith Richard", Guitar Player, November 1977. The interview has been reprinted in "The Guitar Player Book".
3. See Richard Buskin, "Jogging George Martin's memory", Musician no.105, July 1987.
4. I won't even begin discussing the topic of the use of stereo tapes, remixed or not, in lieu of the mono tapes which were for most of the

60s not only the most sold versions, but also the most worked on (in terms of time) and the most "musical". See Mark Lewisohn, "The complete Beatles Recording Sessions", Hamlyn-Emi 1988.

5. For two temporal moments, see J.D.Considine, "Don't call me a re-mixer: Arthur Baker", Musician no.79, May 1985; and Rusty Cutchin, "The Sons of Jellybean", Musician, no.130, August 1989.

6. See Joseph Woodard, "Zappa - the license to be a maniac", section: "FZ on CD", Musician no.96, October 1986.

7. Two extremely perceptive reviews, with regard to the reason why Parker's music was distorted by this operation, are Francis Davis, "Decontextualisin' the Bird", in Francis Davis,

"Outcats" (Oxford University Press, 1990); and Joseph Chonto, "Foul Play in Birdland", Modern Keyboard, March 1989.

8. For a summary of the debate, with opinions pro and contra from critics Gary Giddins and Peter Watrous and producers Orrin Keepnews and Steve Backer, plus a discussion of the various noise reduction systems used, see Jefferson Graham, "Old jazz, new bottles", Musician no.131, September 1989.

9. If we are to believe Bernie Grundman and Bob Ludwig, mastering engineers, the vinyl record is still technologically superior to the CD when played on high class hi-fi equipment. See Alan di Perna, "Two masters of their craft share secrets", Musician no.144, October 1990.

10. I'd like to point out, as a not so common example, the review by Vic Garbarini of the remix of "The Layla sessions: 20th Anniversary Edition" by Derek and the Dominoes, in Playboy, US ed., April 1991, where the critic correctly spots in the extreme digital separation of the guitars and the shifting of the drums further toward the back a misunderstanding of the record as a picture of music played in a physical space.

11. For the aspects concerning the expressive function of the mixing stage, see Michael Gerzon, "A Question of Balance: a critical look at the mixdown process", Re Records Quarterly Vol.2 No.2.

12. Jock Baird, "Roger Nichols: Dan to digital," Musician no.67, May 1984.
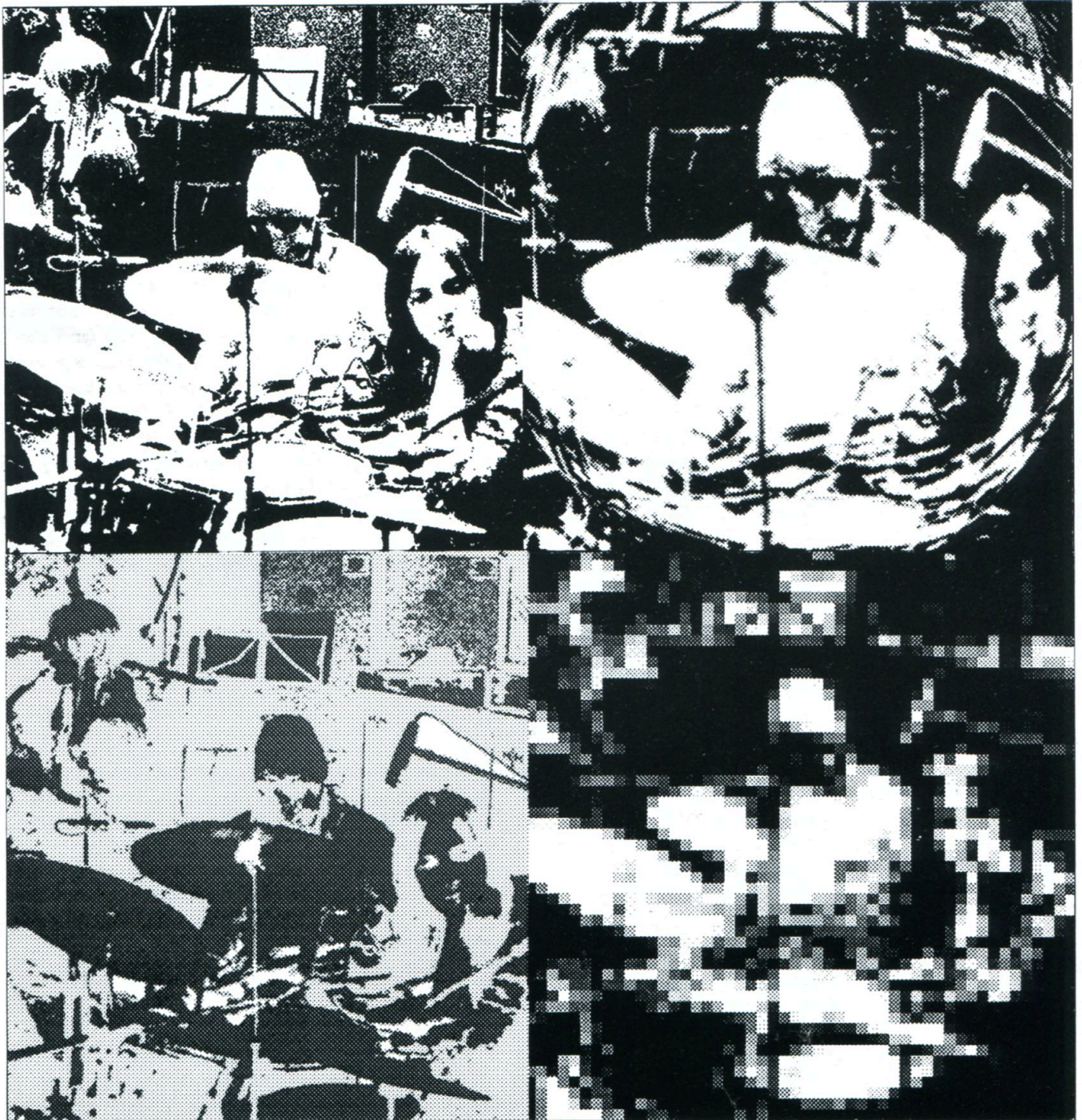
Remix Notes
Chris Cutler

This note was originally written for Giuseppe Colli when he was preparing the above article for publication in the Italian magazine "Musiche". In fact I prepared two notes, one specific (about the Henry Cow remixes) and one general. Reprinted here is the general part, which I hope can be taken as a second voice in the conversation begun by Guiseppe. It will be apparent that this note was written not knowing what Giuseppe's article would contain, therefore there are occasional overlaps, which I hope will be forgiven.

All "originals" are already palimpsests, reworkings and revisions – it is only that "works-in progress", sketches and versions under revision don't usually see the light of day, and so "don't exist" for the consuming public. However I see no reason not to return to a theme or even an existing work (like a recording) and revise it in the light of new thinking or new productive possibilities (more malleable technologies or materials for instance). The public may feel differently – and once public, a work is as much its consumer's as its producer's property. Here's the confusion. To discuss the merits and demerits of remixing is to discuss different judgements and therefore to discuss "rights" of ownership. Often such judgements centre on two quite separate issues: 1) the question of historical accuracy: is this an accurate trace of what "actually" happened "then"?; 2) the question of artistic integrity: of the essence of the work itself and its *raison d'etre*. The first (historical accuracy) is not as straightforward as it may seem, for instance: to be consistent, it shouldn't accept the reissue of an LP on CD format, the grain of the sound being so noticeably different. And how are we to appraise the quality of reproduction in general? Dave Clark's '60s hit "Glad All Over" surely sounded different from the minute it was released, when played on an old *Dansette*, the radio or the most expensive contemporary hi-fi system; not to speak of how the same record sounds on today's best audio equipment. What is historical accu-

racy here? In fact all recordings at all times sound radically different on different playback systems and in different acoustic environments (according to space, surface, furnishings, shape), while psychoogical and subjective differences in listenings by one person at different times, in different moods and places, or between different people are of a multiplicity and complexity that place them beyond discussion. All these variables make discussion about "original" conditions problematical. If we look at the mix made at the time of recording, which *fixed* the "original" in its first publicly available form, we can only say that it was made by certain people in a certain physical and psychological state, at a certain time, in a certain recording studio with certain equipment and acoustics: conditions, in other words, that are unreproduceable. It was made, if my experience can be projected onto others, for an imaginary listener, an abstract idea of the best possible result, to achieve a feeling of satisfaction or completion, in other words, all else cleared away, for oneself in various projections. At every stage, uncertainty about an original, certainly a recuperable original, presents itself, so that it is necessary to compromise, to draw arbitrary lines in order to make any statement about what an original is. With a recording some may draw the line at a pressing, others may insist on going further and playing the record on equipment compatible with its age, others still would go back to the master tape to "hear what the artists heard"... and beyond this the questions become philosophical.

Leaving the historical question aside and looking at the question of artistic integrity, I would, as an artist, *always* reserve the right to rework, replay, remix, anything that I felt was in some way "mine", so long as I felt I hadn't yet finished with it. If for instance, in the case of "In Praise of Learning", the whole group had got

together to remix (as the whole group mixed the original), the end result would surely have sounded different from Tim and Fred's remix, and would have expressed something different too. Fred and Tim made, one could say, *their* version, their listening (constrained of course by what was on the tape) and did so as composers (a role Henry Cow never privileged in cases of dispute over mixes). The result therefore is a more personal and less collective version of the music of a group whose work was marked by its high degree of collectivity, conflict and consensus. It is, in other words, as much a *social* as it is a *musical* revision. I could also do "my" mix, you "yours" and Virgin Records "theirs", which is of course exactly what does happen to many groups. Take for instance the last Pere Ubu record I worked on: the "original" mix was made by the group itself (and Paul Hamann, Ubu's longtime engineer) at the same time that we made the recordings out at SUMA. Phongram were not satisfied with the result and gave various songs to various producers to remix, with the group out of the way. Some tracks they still didn't like and these were re-recorded under the supervision of Simon Hague, who rearranged, reinstrumented and directed them, as well as replacing parts with sampled parts, remaking drum patterns from samples, and so on: effectively rewriting the songs and then making his own mixes. Some of the final versions (which for the public were the "original" mixes) had nothing of the original recording left, never mind the original mix or song conception.[1] Another example: take the News From Babel "Letters Home" recordings. Some of these were first made with different singers from those who appear on the final LP version. Is the original the one that was released to the public? I'm sure an archivist in 2009 stumbling across an old cassette mix or track sheet would "discover" that the song had

originally been sung by...

Perhaps we can deduce that, in general, what is usually meant by original is that version privileged by having been first released to the public.

This means that posible revisions are stopped by a decision that one version is "finished". May not at least the artists reopen that case?

I think it matters therefore who remixes, and why. I'm sure many would prefer a new version somehow to stand *as well as* an earlier ("original") version, so that choice is possible, be it for reasons of perceived quality, nostalgia or whatever (though I have to say I would be happy never again to see the first published version of my book; as I'm sure many painters, poets, novelists, compsers and all such would be happy to destroy what they considered to be unsuccessful "early sketches" of their works). Different interests have to be satisfied.

Each version has its value, but has its value as a different thing: the version first released, Tim's version, Hague's version, John Oswald's version, the remastered CD version, the "rediscovered" earlier or later unreleased version (for instance there are at least four available recordings of Magma's "Mekanik Destriktiw Kommandoh", all excellent, different and illuminating, not least when taken together).

Does an artist have a *right* to suppress things he or she doesn't want made public, or merely the opportunity to not present it? Once presented isn't it in the public domain and anybody's to have an opinion about?[2] Can either party claim priority of jurisdiction over it? Shouldn't anyone have the right to remake or revise their own work if they want to, and shouldn't the public be able to prefer an earlier or new version (or not care about either?). In the domain of mass products and recording technology does it even make sense to insist on

an "original" or to deny musicians the opportunity to register time passing, or ideas and technical possibilities changing? So far as I am concerned as a musician, *it is possible* to remix and therefore an option which could be sometimes profoundly welcome; as a listener I want the opportunity to unearth and compare and have an opinion about whatever I or anyone else can get hold of in the fields that interest me. I think both positions at once are defensible; either one or the other alone morally problematic, and practically unworkable.

London, May 1991

1. Indeed there were "party mixes" that didn't even have the group on them at all, only samples of David Thomas's voice ("Love, love, love", UBUCD33 Fontana 1989).
2. And I accept that argument which gives license to *other people's* productive access to a work - as John Oswald and Negativland argue elsewhere in this issue.
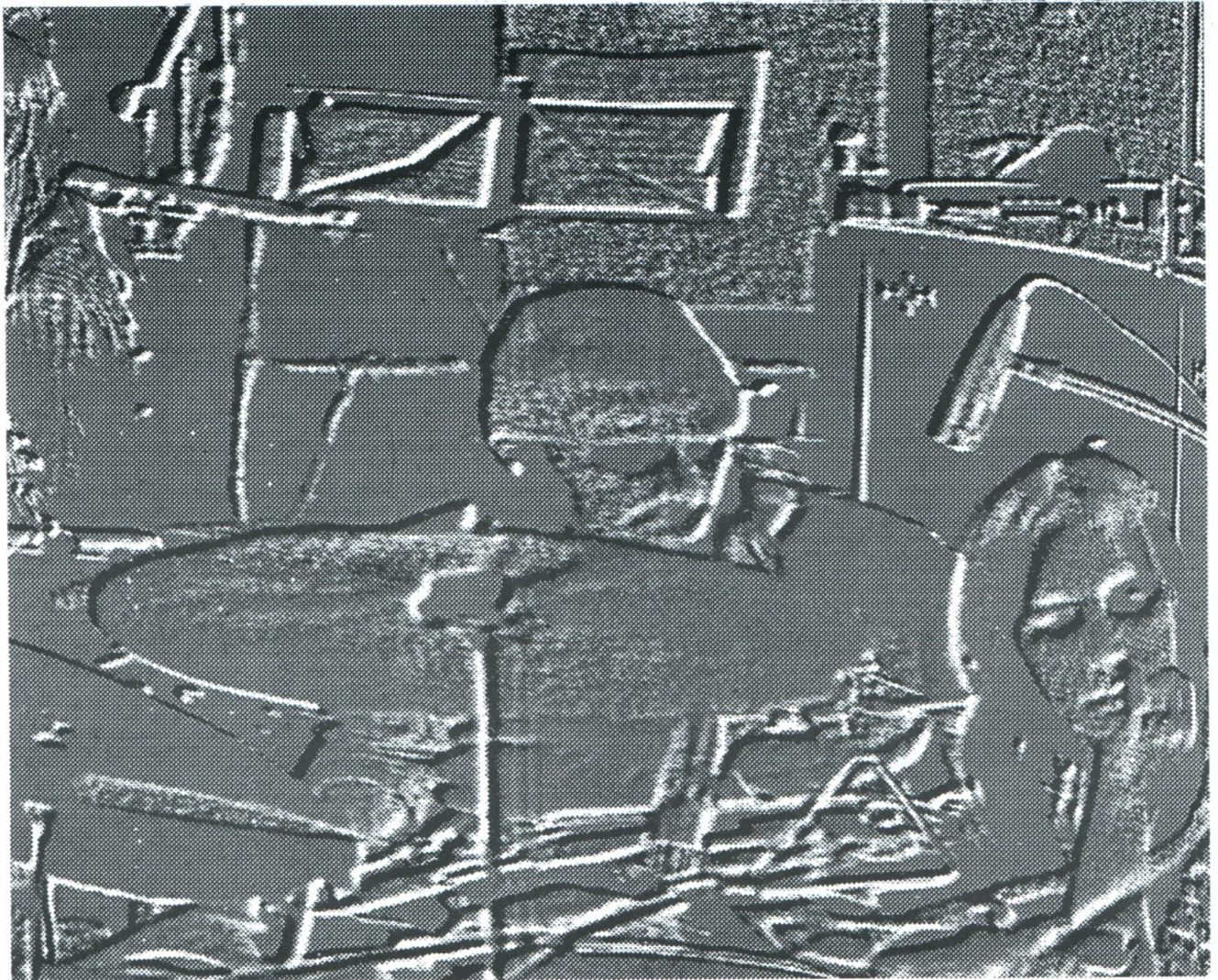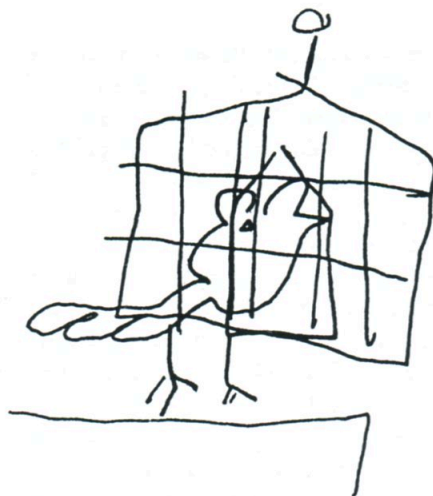
Some thoughts on *Folie/Culture*

Jocelyn Robert

Strictly speaking, "Folie/Culture" is not music. That should help clarifying the project. Music is probably the closest thing to silence that we know. Music is used to bring down the variation level in sounds, to bring down the differences, so that we can relate one sound to another, guess some kind of order, of time organisation between sound events, so that we can build relations between discreet parts of the sound flow. Music selects and organises some specific and limited types of sounds, some limited time variations in the order of appearance of the chosen events, so that we can more or less easily feel or understand a structure, a presence, a form instead of chaos. Music is used to turn down the environment sounds, silencing the noise and replacing it by something relatively simpler, something that we can understand and, hopefully, enjoy. The strongest example of the generalisation of this use of music is probably the now international gesture of people putting on their "Walkman" in public areas: public space is so overloaded with sounds - organised and disorganised - that people seek escape. And they find it in music as silence. In music as a thing to silence the world down.

But sometimes, we happen to find evasive structures in the sounds that simply come in by the windows, from the streets. Sometimes the sounds get together for a couple of minutes and then go weird, sometimes they parade one after the other in the kitchen very slowly, very gracefully, sometimes they just blast everything out of importance... and often, if not most of the time, I feel that it would take just a little help, a little element here and there to link them one to the other, to make all this sound mess understandable, listenable, enjoyable.

So this is why I did "Folie/Culture". It is probably not music. Because it is much too loosely knitted to be used as a silencing thing. And the structure is not strong enough to win a battle against the chaos of urban sound, to get us to tap our feet to forget the noise. It is a half-empty structure to put our environment sounds in, a kind of glue to link parts of our daily sounds together into a whole thing. Something like a puzzle with half the pieces in the box, and the other half to be found in our own house. Something like a little box with compartments to collect rocks in our own sound garden.

"Folie/Culture" is half a sound work, and I tried to have it fit on this other half-structure of sounds that come by the windows every day. This is why it should not be listened to as if it were music. Because it cannot silence noises. And it should not be listened to as ambiant musak. Because it is too close to ambiant noise to sweeten it, it would add to it instead.

I would rather hope that it works like a kind of sound microscope, helping us ear sound links in our world that we usually think are too small or too loosely structured to be listened to. Or like these graphic games in kids books made from points and numbers, when a line has been drawn from one point to the other to show the picture. Or like a frame that we would hold with arms extended, transforming each place we used to look at or listen to into a new, comprehensible world.

So, please, open the windows and listen to it all.

iRCAM, LEGiTiMATiON, POST—MODERN MUSiC POLICY

Georgina Born

The Institut de Recherche et de Coordination Acoustique/Musique (IRCAM) *is the computer music research institute directed by Pierre Boulez which opened in 1977 (then as the music wing of the Centre Georges Pompidou).*

The era of post-modernism has produced a crisis in the traditional processes of aesthetic legitimation. Aesthetically, post-modernism is often associated with the loss of a sense of historical certainty, with aesthetic exploration and pastiche of earlier forms, with the influence of "other", including non- western and popular, cultures, and so with greater pluralism and populism. This situation creates problems for the institutions that undertake the process of legitimation of musical and artistic works, whose task has been to judge between different musics in order to dispense financial subsidy or support. In Europe, and until recently, the majority of these subsidising institutions have been governmental ("public" or "state"), while in the United States they have been both private corporate and governmental (e.g., the National Endowment for the Arts). Although the dispensing of financial subsidy to the arts has always been intimately bound to judgments of aesthetic value, in Europe - given the state's central role in cultural subsidy - it is particularly apt to speak of this double process of judgment/legitimation and financial provision as a form of policy: private cultural subsidy, so that we can also consider the aggregate of American corporate and private cultural subsidy as America's form of cultural policy.

The whole financial and institutional apparatus of cultural subsidy is dependent upon a discourse that purports to separate out works of "timeless" historical value from those whose worth is "ephemeral" and limited to the present; and this distinction has, of course, been closely linked with that between high art or high culture as opposed to popular or mass culture. Thus the apparatus of subsidy is itself based upon an often unconscious desire to assert high culture's absolute difference from "low" or popular culture, as a few writers have recently pointed out.[1] Moreover, this anxious (and defensive) assertion of difference has served throughout this century as a fundamental component of modernism - the artistic discourse that became increasingly dominant - while at the same time, the institutions of cultural subsidy, legitimation and canonization have become mature and entrenched. Post-modern pluralism and loss of aesthetic certainty, then, not only question the absolute distinctions that were the basis of cultural legitimation during the modernist era, but may also, in turn, undermine and unsettle the institutions of cultural subsidy and policy that have been founded upon that discourse.

Are cultural subsidy and policy therefore irrelevant or even obstructive to the post-modern present? Certainly, in Britain the government is determinedly cutting away at the roots of state cultural subsidy, enjoining the arts to get tough and face the naked truth of the judgment of the market place, in line with its general free market ideology; and so "cultural policy" appears to wither away. (Of course, this anti-statist approach is just as much a form of policy.) While in France, state cultural policy and subsidy remain strong, and since the Socialists' advent to power in 1981 stronger than ever. What appears there as a "directed cultural pluralism" is populist in intent, but is in fact still primarily consumed by the cultured middle classes[2] and didactic while pretending not to be. The proliferation of museums for every aspect of cultural life, and their unrelentingly scientistic approach, are sure signs of this.[3] Thus the ideology of "pluralism" conceals a still centralised, didactic and elitist cultural policy, nowhere better exemplified than by IRCAM - the jewel of French contemporary music policy.

IRCAM commands vast state resources (approximately 30 million francs a year subsidy from 1982-85). It has an extremely high profile nationally and internationally, with a glittering reputation; but it has also attracted some notoriety. In two related ways IRCAM can be seen as an extreme, if unprecedented, expression of musical modernism. First, in the scale of public resources that it commands - its existence as "official music culture". Second, in the character of its discourse which centres, in terms of reproduction, on fostering and extending Boulez's canon of high European musical modernism and, in terms of its production of new music and knowledge, on bringing science and (primarily high) technology into alignment with new music. IRCAM is involved both in applied technology - the production of prototype technology (hardware and software) for sound synthesis and compositional control; and in pure acoustic, psychoacoustic and what is called music research. Its most ambitious work is in the application of cognitive science, psychology, and artificial intelligence to music.

In the remainder of this essay, drawing from my own research on the Institute, I want to discuss the question of musical legitimation in relation to IRCAM; and then to explore this more widely in relation to potential directions for music policy and subsidy in the post-modern world.

What is "musical legitimation" about? Simply, it is the concern to provide authoritative extra-musical justifications, an armory of extra-musical purposes, for music. Most musics are accompanied by some form of indigenous music theory, often in the form of fields of meta-

phor, through which a culture - or the "musical experts" of that culture - attempt to describe, discuss, rationalise the experience of musical sound. Since musical sound is an aural abstraction, this "translation" of the experience into verbalised and/or literate form (which is actually a transformation) is a common and perhaps necessary communicative function. But the content of this "music theory", and how and by whom it is controlled and distributed, raises crucial social and cultural questions to do with power, mystification and ideology. As Foucault has argued, "knowledge" always embodies an underlying structure of power;[4] and Attali, for example, has outlined the particular forms of power embodied by certain dominant, historical music cultures.[5] The legitimation of music by the production of an accompanying discourse or music theory, then, is far from new, nor is it unique to western culture.

But in the modernist period, following the late romantic crisis of tonality and of realist representation, composers and artists met their sense of need for new musical and artistic systems by foregrounding theory, and by drawing upon science and technology to provide the theoretical and conceptual bases of such new systems. They sought increasingly authoritative extra-musical forms of legitimation: through the production of sophisticated theory, and through drawing for the content of that theory on scientific discourse - itself an esoteric and highly legitimate form of discourse at the heart of modernist notions of historical progress and of the "search for truth". Thus in the modernist period, the desire for artistic legitimation becomes intensified to an unprecedented degree, and its content becomes centered on the construction of discursive links to science and technology.

Returning to IRCAM, it is clear that its discourse and that of Boulez - a discourse founded on theoreticism, scientism and a concern with technology, new media, and new sound materials - is characteristic of modernist strategies for legitimation. IRCAM's discourse, and its centralised and privileged institutional form, are imbued also with a sense of historical priority and centrality: the sense that "historical progress is being made here". Indeed IRCAM's institutional form presupposes, demands that the institute ideologically construct itself so, or its subsidy and privilege could not be justified. Boulez's founding vision of IRCAM describes its purpose in just these terms: he sees its role as a vanguard oriented to the future, doing work of long-term value, disdaining the short-term dictates of commerce.[6]

IRCAM's ideology and power cannot be understood in isolation from Boulez's own history. Boulez's career has been a model in the construction of charismatic artistic leadership. From his student days he has used many strategies - controversial polemic and political stances, rhetorical and theoretical persuasion, seeking the patronage of the powerful, making bridges to other intellectual and artistic fields, creating national and international alliances that are played off against each other - to increase his visibility and audibility. Above all, it is through a combination of both composition - i.e. origination - and writing, teaching, theorising, performing - i.e. reproduction - that he has sought to control contemporary musical discourse: a strategy more broadly characteristic of modernism, as in the example of Schoenberg. But it is Wagner with whom Boulez is most often - and cultishly - compared, for breadth and profundity of musical vision, and for a concern with the totality of musical life. The mythicisation of Boulez as culture hero has rubbed off onto IRCAM, so vicariously endowing it with great importance.

Given all this, it is hard to draw up a realistic balance sheet for IRCAM; and indeed its vanguardist ideology apparently makes irrelevant, and so seeks to evade, any question of evaluation in the present. There is, then, a teleology inherent to modernist and avant garde legitimation, about which it can only be noted, wryly, that not all art produced under the banner of being "oriented to the future" is guaranteed to be of future value - and self-conscious vanguardism, scientism and so on have never been absolute or necessary preconditions of great music. Further, the scientism of IRCAM discourse tends to reproduce the category error or confusion whereby questions of musical beauty and aesthetic success become transmuted into those of scientific truth and technological operability or functionality. This may seem a poor trade-off: surely "truth" is a more difficult goal than musical success. But in fact it indicates starkly the topsy- turvy and aesthetically bankrupt character of modernist cosmology, in which scientific and technological validation threaten to become displacements of the deeper problem of musical and aesthetic innovation.

If we persist in trying to evaluate IRCAM's output over its first decade, and to look to this to legitimise its privileged existence, the picture is not too bright. Overall, IRCAM's musical, scientific and technological products have not yet made major, sustained contributions to their fields. It is a peculiar truth that IRCAM does not support its pure research well, so that its acoustic and psychoacoustic work is often done by visiting researchers or those employed in other capacities. Except for individual odd contributions, then, this area has not yet proven very fruitful. IRCAM's technological results have fared unevenly. Its main prototype hardware, the 4X machine - renowned for a short while as the most powerful realtime digital synthesiser in the world - despite taking up a majority of IRCAM's resources for some years, has for various reasons failed to be industrialised sufficiently to enable its wider distribution among the computer music fraternity; it remains primarily an IRCAM "tool". IRCAM's A.I. influenced software has fared better: the *Chant* synthesis program has been distributed among several major computer music centres, and with its sister program *Formes* - for high level con-

trol of musical structure - *Chant* has been written to run on both large and small machines, such as the Apple MacIntosh. Musically, a small number of pieces by Jonathan Harvey, York Holler, and Jean-Baptiste Barriere, and above all Boulez's own *Repons*, are commonly cited as major IRCAM successes. Boulez himself is reported to admire only a few such pieces. Yet the American reception for *Repons* in 1985 was lukewarm; while sceptics from the wider computer music field have been known to doubt whether several of these pieces really exploit the full potential of the high scientific and technological resources that is is claimed went into their making. Even, or especially, the quality of IRCAM's musical output is therefore yet to be established.

More interesting are the widespread internal doubts and contradictions that I found within IRCAM culture: disinterest in and even dislike of much of IRCAM music, composers continually dismissing each others' work, harsh technological criticisms between rival projects, researchers doubting the uses that others claimed to be making of their work, gaps between people's formal and informal selves. These are signal aesthetic and discursive uncertainties that crack the apparently unassailable surface confidence of IRCAM's scientistic and vanguard modernism.

In the light of the above it would be possible now to criticise IRCAM in terms of its scientific and musical output to date, and so to question its legitimation. But this would be to accept at least some of IRCAM's own discursive terms. Instead, I want to step outside them and to make two further observations on this form of legitimation. First, IRCAM's scientistic and technological musical modernism might be seen as a cultural mutation of a phenomenon analysed by Habermas[7]: the increasing collusion between science and technology since the War and their use, under an ideology of tecnocratic problem-solving, in the management of civil affairs so as to prevent social crisis and avoid politicised public awareness. In a sense, the

turn to science and technology in the modernist arts functions similarly to avoid the perception of deeper aesthetic and political problems, and subsumes aesthetic problems beneath a technocratic consciousness.

However, my second observation, suggested by Lyotard's analysis of the post-modern condition,[8] concerns a possible shift in IRCAM's conditions of existence which might become problematic for the institute. According to Lyotard, the present period is witnessing a change in the dominant form of legitimation of knowledge: from the modernist notion of a progressive search for universal truth in the service of emancipation, to the post-modern concept of "performativity" - an emphasises on performance, utility, results, with the goal of attaining the best possible input-output equation. If Lyotard is right, then IRCAM's endless deferral of evaluation through appeal to avant garde futurism will falter and its whole *modus vivendi* may be called into question. Aspects of its relations with the French state already hint at such a tension, and at increased demands for immediate results: larger audiences and greater public success, better relations with industry, and so on.

Interestingly, the main extant criticisms of IRCAM in the French public sphere take the form of a sociological critique that is then linked to the aesthetic. IRCAM tends to be attacked for its monolithic institutional form, for its virtual monopoly of state contemporary music funds and so its monopolistic privilege, and for the dominance of one musical personality - Boulez. All of this, it is claimed, predisposes the institute to a singular, "directed" aesthetic: to aesthetic monopoly. This linking of the sociological and the aesthetic is another key strand of post-modern cultural theory, and it is this that I now want to pursue briefly in relation to alternative visions of cultural policy.

If we reject the scientistic, technological and vanguardist discourse of

this area of contemporary music, and its aesthetic and institutional forms, what other models do we have for a post-modern music policy, and what alternative forms of legitimation might they involve? There are two other common proposals for post-modern cultural policy. First, aesthetic pluralism: support to encourage aesthetic experiment and diversity within different extant genres, musics that have hitherto lacked the legitimate authority to claim subsidy - for example, jazz, rock, pop, ethnic, improvised musics. In Britain this kind of music policy was favoured, for example, by the innovative Greater London Council during its brief period of cultural radicalism in the early 1980s before being abolished by the Thatcher government. The GLC supported the setting up of popular music centres and alternative circuits for distribution in order to break down the monopolistic hold of the leisure multinationals. In France, the regime of Socialist music minister Maurice Fleuret also gestured at such a policy in the early 1980s; but on closer scrutiny, the funds given to popular musics were minimal compared with those being fed to IRCAM and the like.

This kind of policy to encourage a "regulated aesthetic diversity" is itself linked to the second common post-modern proposal: that of support for new social forms and sources of culture, to encourage the production and distribution of music by women, blacks, ethnic and sexual minorities. Again, this approach was characteristic of GLC cultural policy, although it has not found great support in Socialist France. Clearly, new social roots and forms of cultural production will be likely to generate new aesthetic forms, greater diversity; and also, according to some, a newly politicised post-modern artistic avant garde, one rooted in the new social movements of feminism, anti-racism and gay rights. These are complex issues, and such policy initiatives reflect cultural activity that is currently developing, and will continue to, subsidised or not. However, I want to end by airing a couple of critical issues in relation to these

"solutions" that are sometimes over-looked.

First, neither the commitment to support hitherto "illegitimate" (popular) musics, nor musics from new and hitherto "unheard" social and cultural sources, can obviate the need (also) for specifically musical-aesthetic judgments of musics so produced. In the end, whatever the genre and whoever the producers, there remain (different) aesthetic criteria that need consciously to evolve through open critical debate and musical interplay. Too often when artwork is being produced under these pluralist and politicised post-modern conditions there can arise a sense of repression of the potential for, and reality of, aesthetic dissent and conflict. Such a productive and important conflict occurred within British feminism, for example, around the work of feminist artist Mary Kelly in regard to the psychoanalytic theory informing her work and its artistic results. The debate concerned whether these were successful or resulted in mystifying an elitist art that would alienate the majority feminist audience, despite common political aims.[9] But such debate within feminist art practice is, at least in Britain, quite rare.

Thus in the end, these musical and aesthetic judgments must be made, not evaded through recourse to universalising scientism, theoreticism, reification of technology and associated domains of knowledge (as in IRCAM's mileu), or by recourse to a self-righteous sociologism or a kind of sociological-political legitimation that equally evades specifically musical questions. It is through a sensitivity to the over-production of legitimating discourses - of whatever kind - and to their particular discursive and institutional character that we can become more historically conscious of the legitimating strategies going on around different musics, and that seek to overdetermine their cultural and social power.

Musical-aesthetic judgment is not easy; our problem has been that we seek either to hive it off to those experts propounding a legitimizing metanarrative of historical progress, or to slough off the problem of judgment through recourse to the apparently "transparent", irreproachable immediacy of the market and its illusory "reflection" of taste. Both strategies of elitism and "populism" bring illusory relief from the stress of aesthetic responsibility. Instead, for a post-modern music policy, aesthetic judgment might be made by attempting to create a social organisation for policy-making that models as closely as possible the contemporary aesthetic process itself: a diverse, plural and volatile set of genre-specific panels, made up of elected musical "experts" from those genres; but changing, evolving, and above all interrelating, shifting the boundaries - so attempting to emulate the promiscuous and productive, syncretic history of much musical-aesthetic innovation.

Notes

1. Andreas Huyssen, *Across the Great Divide: Modernism, Mass Culture, Postmodernism* (Indiana U.P., 1986); Thomas Crow "Modernism and Mass Culture in the Visual Arts" in F.Frascina (ed.), *Pollock and After: The Critical Debate* (London: Harper and Row, 1985).
2. On the audience of the Centre Georges Pompidou, see Nathalie Heinich, "The Pompidou Centre and its Public: The Limits of a Utopian Site" in R.Lumley (ed.), *The Museum Time-Machine: Putting Cultures on Display* (New York: Comedia/Routledge, 1988).
3. The new museum of science and technology at La Villette is to be surrounded by a new Parisian park which will not only hold gardens and restaurants but also areas devoted to the scientific study of gardening and of cuisine. Apparently pleasure and leisure activities alone are insufficient!
4. Michel Foucault, *Power/Knowledge* (Brighton: Harvester, 1980).
6. Jacques Attali, *Noise: The Political Economy of Music* (Minneapolis: University of Minnesota Press, 1985).
6. Boulez's articles in which he outlines his vision of IRCAM: "Where Are We Now?" (1968), "The Bauhaus Model" (1970), "Freeing Music" (1972), "Technology and the Composer" (1977); collected in *Orientations* (London: Faber and Faber, 1986).
7. Jurgen Habermas, "Technology and Science as Ideology" in *Toward a Rational Society* (New York: Beacon, 1970).
9. Jean-Francois Lyotard, *The Post Modern Condition: a Report on Knowledge* (Minneapolis: University of Minnesota Press, 1984).
10. Rozsika Parker and Griselda Pollock (eds.), *Framing Feminism: Art and the Women's Movement 1970-1985* (New York: Routledge, Kegan and Paul, 1987), pp.203-205.

Studio 2
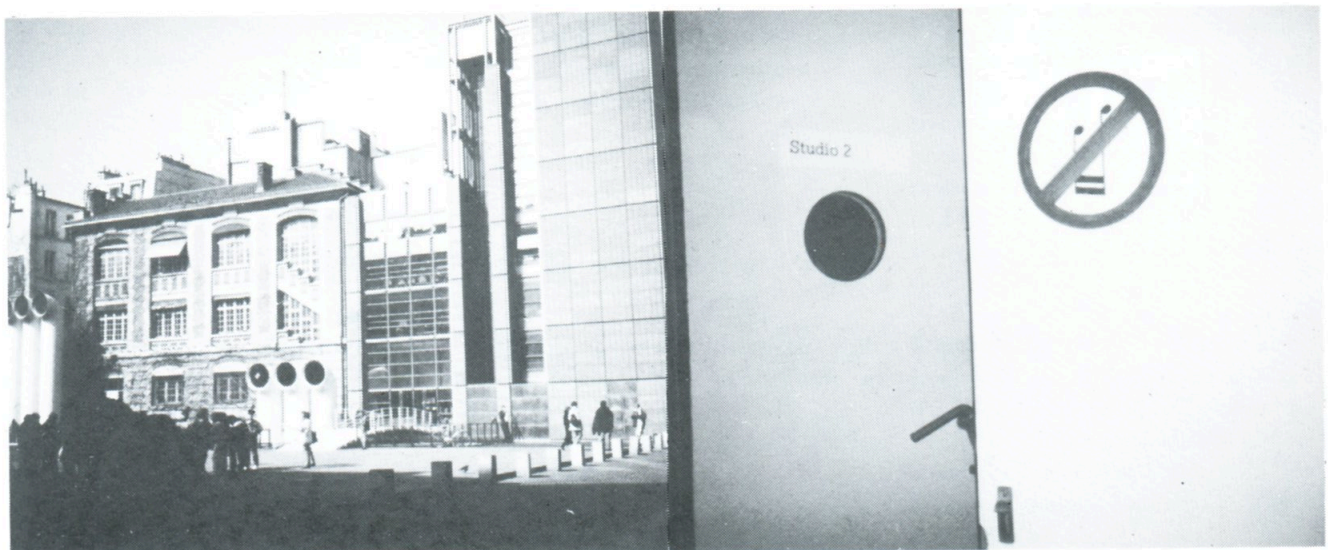
SELF-MADE MEN

Virgin

Stephen Rickard

This article is extracted from a longer paper which set out to identify the internal culture and configuration (i.e. structure) of the Virgin Group, and to determine whether, and how, both of these aspects might be modified to enable the Group better to address its external environment.

In this context the culture of the organisation may be defined as "the way we do things around here".

I have included here the first three section of the paper (unedited), since they provide interesting background to changing perceptions of Virgin over the past two decades.

1
Introduction

In 1970 Richard Branson was operating "Student" magazine from the basement of a four storey house just off the Bayswater Road: "I'm Richard Branson, I'm eighteen and I run a magazine that's doing something really useful for young people...". In November 1986 The Virgin Group Plc, turnover £189 million, was launched on the stock market; shares were three times oversubscribed. The Daily Mail asked (5/11/86), "Would you buy shares in a one man band, headed by a middle-aged hippy who lives on a houseboat and dabbles in powerboat racing, airlines and rock music?"

This report is an attempt to identify and then evaluate the corporate culture and organisational structure of the Virgin Group. This analysis will involve a recognition that the means that Virgin have used to achieve their ends to date are indeed unorthodox, although the question of whether Virgin really is "an exception to the rule" is more difficult to answer.

It must be emphasised that this study is not concerned directly with either marketing, strategic or financial decisions, except insofar as they impinge upon the fundamental objective of the study.

Inevitably the spectre of Richard Branson dominates this discussion.

To the general public he and Virgin are regarded as synonymous. Clearly Branson is a key element in the structure and success of Virgin; but is he *the* key? For example does Virgin operate under a tight "system" culture, with Branson providing the appropriately casual PR image as merely icing on the cake? Or does the "media" Branson equate with the "real" Virgin: a company relaxed and informal through and through?

Section two of this report provides a brief overview of the history of the Virgin Group. In the case of Virgin, more than for most companies, this history has been a major determinant of the Group's present operating style. It is not possible to provide within the constraints of this report a useful comprehensive or "objective" summary of the nineteen year existence of such a fast-moving company as Virgin. Hence this section concentrates on those aspects which bring out the salient issues which we have identified.

The section also attempts to draw out the rationale behind the company's ventures and any common traits that can be highlighted as fundamental to the Group's organisational development.

Section three builds upon the previous section by identifying the key issues *within* Virgin relating to the organisation's culture. These include:

- Richard Branson
- the organisational culture
- the psychological contract
- flotation.

2
The Development of Virgin

"Branson, I predict that you will either go to prison or become a millionaire."
Headmaster of Stowe, on Branson's leaving in 1967

Student: Richard Branson left Stowe public school in the summer of 1967; in January 1968, together with his school friend Nik Powell, he launched "Student" magazine.

Despite the climate of radical politics, student unrest and the "summer of love", "Student" was not a radical magazine; thanks were given in the first issue to Marjorie Proops, Peter Scott, Edward Heath and William Rees Mogg. Fond memories of Branson in his youth having been a radical hippie are simply not true. He was to prove to be radical, only in his entrepreneurial style.

Virgin Mail Order: The name Virgin first appeared when "Student" found itself in severe financial straights. It was, legend has it, Branson who thought of the idea of selling cut-price records by mail order. Why Virgin? "Because," says Branson, "we were novices in business."

The first advertisement for Virgin's mail order operation appeared in what proved to be the last issue of "Student" magazine. The mail order service proved to be extraordinarily successful, and provided the first sign of what became a trademark of Virgin's style of operation: when in financial difficulties, *expand out of trouble.*

"[N]or was it calculation as to how best to exploit the burgeoning 'youth market' which accounted for Virgin's initial direction. It was much more random than that, dictated not by grand design but by the imperatives of survival: the mail-order business had grown out of the requirement to raise money for "Student" - and subsequently eclipsed it" (Mick Brown, *Richard Branson, The Inside Story*, p.59).

It was at this time that Simon Draper, Branson's second cousin, joined Virgin. Brought up in Cape Town, South Africa, he became the "ears" of Virgin, most able to understand the music that Virgin sold. He is now Managing Director of Virgin Records.

Virgin Shops : In January 1971 the Post Office workers in the UK went on all-out strike, effectively paralysing Virgin's operations. Branson's response was instant - Virgin would open a shop. Two weeks after the original idea, the first shop was opened in Oxford Street; pop music and middle-of-the-road records were not stocked.

Over the next two years Branson set up a Virgin-owned recording studio, called "The Manor", in a 17th Century manor in Oxfordshire, and opened a second shop in Liverpool. However, escalating costs and low margins on mail-order sales proved expensive, and the company found itself £60,000 in debt.

The first solution adopted by Branson was to perpetrate a series of VAT frauds in early 1971, which were unfortunately discovered by HM Customs and Excise. Narrowly avoiding prison (although spending a night in police cells), Branson was faced with a £53,000 fine, on top of the company debt.

Branson and Nik Powell (a key player in Virgin at this stage) responded to this crisis by embarking on a policy of opening shops - "as many as possible, as fast as possible" (MB, p.75). Fifteen shops were opened in the next two years, borne not of careful planning but of desperation.

Virgin Records: Mike Oldfield's "Tubular Bells" was the first record released on Virgin's record label - in May 1973. After many refusals from other record companies, on the grounds that his music was uncommercial and too much of a risk, Oldfield became a fixture at the familial atmosphere of the Manor, where he rerecorded his album for release.

The record was critically very well received, most critics being unable to "classify" the music at all. This proved to be the first acknowledgment by the orthodox businesses of the day that Virgin were indeed "on to something" - tapping a youth subculture that had until then been almost completely ignored.

Whilst it would be easy to credit Branson with having effectively identified and targeted this market, the truth is almost certainly less impressive: Virgin sold records to their peers. Certainly up to about 1975 Virgin were genuinely part of the subculture to which they sold their records. The only exception to this rule appears to have been Branson himself, who by common consent knew very little about the music that his company sold.

Consolidation: The period from 1973 to 1977 saw substantial consolidation and growth of the company. Tubular Bells was followed by a substantial catalogue of other album releases, much of the music being throroughly "uncommercial".

The mail order service was closed down in 1974, and Virgin diversified around its core business, opening a concert booking agency and an artists' management company (both of which were eventually closed down) and a music publishing company - which proved to be very successful. However, the record label turned out to be the principal source of income.

The Sex Pistols: By 1977 Virgin were becoming out of tune with their marketplace. New recording artists were proving difficult to capture, and the label was attracting a reputation of being old-fashioned and out of date. This was reinforced by the arrival of the "new wave" in 1976-77, particularly The Sex Pistols.

Simon Draper, on first hearing The Sex Pistols, thought them "an indescribable noise", a sentiment with which the unmusical Branson was not prepared to disagree. However, following many public controversies involving the group, and on hearing of their £125,000 compensation following EMI and A&M's termination of their contracts owing to their offensive public image, Branson decided that the group made sound commercial sense. To Branson, the worse The Sex Pistols' public image became, the more he wanted to sign them. As matters turned out, Branson had his way; Virgin were back on the map.

Expansion: In 1977 Virgin's profits for the year were £400,000; by 1982 company turnover had risen to £48.6 million, with profits of £2 million. 1983 figures were £94 million turnover and £11.4 million profit.

The core business remained music, particularly the record label and retail outlets, but Virgin had diversified, sometimes in a seemingly uncontrolled manner. By 1981 Virgin had acquired or created a London Recording Studio (The Townhouse), a book publishing company, Virgin Films, The Scala Cinema in London, The Venue club, Nekkar Island (in, appropriately, the Virgin Islands), and a video editing suite. Other additions included Heaven, the gay London nightclub, a company selling food around industrial estates ("Top Nosh") and a company dedicated to servicing air conditioners.

Virgin Atlantic : In March 1984 Mr Randolph Fields approached Branson, offering to sell him an airline. It had not occurred to Branson for one moment to own an airline, but, typically, he responded favourably to the suggestion. Fields had a paper licence and had carried out some feasibility studies; he required only Branson's money.

Simon Draper was strongly opposed to such a diversification. He saw it as reckless to move out of the core business into an area where Virgin had no experience whatsoever, particularly into such a high risk operation as running an airline. However, since Branson at that time owned 85% of Virgin, it was clear that Draper would lose the battle. The rest, as they say, is history.

Flotation: The issue of the flotation of Virgin is discussed separately in the next section. Suffice it only to say here that towards the middle of the 1980s it became clear that Virgin required more capital than it could obtain internally or from bank loans if it were to finance the rate of expansion that was desired. (Banks were consistently unsympathetic to the levels of risk that Virgin were prepared to undertake).

Therefore it was decided to float the company on the stock exchange.

It is clear that prior to the flotation Virgin's style of operation was somewhat unorthodox. This was specifically addressed in the run-up to flotation, in order to increase investor confidence. Two non-executive directors were appointed, for example (both of whom resigned owing to disagreements). A crucial issue to identify is the extent to which Virgin's culture was actually changed by such restructuring.

Similarly it was decided that the high risk airline and associated businesses would remain private, in order not to prejudice the public launch. These activities were formed into a separate company called Voyager Group Ltd., ownership of which was retained by Branson.

It became clear that the launch of Virgin was not well received by the City, and late in 1988 a management buyback was effected, taking the company out of public hands.

Post Flotation: By the middle of 1988 Virgin had 74 small record shops and 9 Megastores. The smaller stores were sold to the Our Price chain at the end of 1988 so that Virgin could concentrate on the Megastores.

Virgin currently employs about 1600 staff and operates in 17 countries. Profit before tax in the year to 31st July 1986 was £19.1 million, on a turnover of £188.6 million. More than half of this turnover is generated overseas.

The company is now structured into three divisions: Music, Retail and Vision. The Music Division concentrates on the marketing of artists and songwriters in the popular music market. The Retail division operates a chain of retail outlets, selling records, tapes, CDs etc., videos and other leisure goods. The Vision Division covers interests in film and video distribution and broadcasting, television and computer games; this division also has an interest in book publishing.

The parent company develops group policy, examines new opportunities for the group and supervises the activities of the operating divisions. The head of each division is supported by a team of executives responsible for creative and adminis-

trative tasks. Each division operates relatively autonomously with close communication being maintained between managers and directors at divisional and group level.

The working environment within the divisions is generally based on small units. Most of the directors are aged between 30 and 50, reflecting the relative youth of the Company. Branson himself is 43.

3
Organisation Culture

This section identifies the key issues that require clarification in this case, and attempts to establish the corporate culture and structure of Virgin. However, there is first a very brief summary of the main characteristics of Richard Branson's style, and thus his contribution to the success and style of Virgin.

Richard Branson: Although Virgin is best known for its music interests, Branson has little or no interest in the music itself. For him it is the business of business that is attractive.

"Richard would conceptualise the impossible and get much nearer to realising it than anyone else could" (Charles Levinson, Branson's lawyer).

"If you asked Richard to lend you a fiver, it was said, he would immediately try to beat you down to £4.50" (MB, p.93).

Branson has always functioned within Virgin as a catalyst. He has initiated very few projects himself; his role is more to "vet" proposals made to him. The Manor recording studio, Virgin Atlantic Airlines, Challenge, the balloon escapades: these were all set up after an initial suggestion by others. However, when he does become involved in a project he commits himself completely, galvanising other staff and "getting very close to the impossible".

Branson does appear to have a very low boredom threshold. The cycle of gestating an idea in high enthusiasm, executing it in a rush of energy and then growing bored with it, restless for some other challenge or enthusiasm, is common. Mike Oldfield, whom Branson managed,

noticed very quickly that Branson would often "mess things up" if he did it himself. His talent was to inspire others to do their best.

"If something was a loss, he really wasn't concerned with that; somebody else could clear that up – he was already onto the next thing. He was not reckless exactly, but he certainly never stopped to consider whether that loss was too great to hamper expansion. He just got on with expansion" (Jack Claydon, Virgin's accountant, quoted in MB, p.132).

Many of Branson's senior management colleagues are longstanding friends. Simon Draper, Robert Deveraux, and Nik Powell (until his disagreement with Branson) have been together for nearly twenty years. Powell was an early school friend of Branson's.

Games and irresponsibility have always been a strong part of Branson and of Virgin. Stories abound of staff outings which ended with food fights in restaurants or people being thrown into swimming pools fully clothed, usually at Branson's initiative. It is not uncommon for Virgin to be banned from returning to particular establishments.

Mick Brown recounts a story of Branson and Oldfield attending a meeting with the Dulux company to discuss the possibility of Oldfield providing the music for a new TV advertisement for Dulux paint. Throughout the meeting Branson pretended to be Oldfield and Oldfield, wearing a suit, pretended to be Branson. The pair were not offered the contract.

Branson is reputed to have once said, "I believe in benevolent dictatorships, provided I'm the dictator" (MB, p.140). This accords well with his running of Virgin. Mick Brown refers to Branson as having "something of the paternalism of a nineteenth century Lancastrian mill owner."

Branson prefers to promote from within the group, although in the pre-flotation run up some external expertise was brought in. However, generally his view is to encourage entrepreneurship by setting Virgin up as many small constituent companies (over 150 at one stage) and

giving managers and staff a stake in those companies.

The importance that is attached to Branson is indicated by the incident that occurred in May 1987, when he nearly died in a parachute jump. The day after the event was shown on television Virgin shares lost 15p in the market.

Organisation Culture : Virgin's internal culture is very much a product of Branson's individual style. This manifests itself in many ways, from the corduroy trousers and scruffy sweaters worn by Branson to the exterior design of the many small and shambolic premises occupied by Virgin in the Notting Hill area.

The Virgin retail outlets have changed enormously from the early days when shop floors were lined with mattresses to allow customers to spend the day in the shop. The differences between the HMV and Virgin Megastore outlets in Oxford Street are now slight, although Virgin retains (proudly, no doubt) its slightly shambolic image.

Stephen Robbins has identified ten distinct criteria for enabling the internal culture of an organisation to be identified. Without referring to them explicitly, those criteria have been used here to help identify the culture of Virgin.

There is no doubt that concerted attempts were made to change the company's culture in the run up to flotation. This was the result of conscious effort, but did not appear to be sufficiently successful.

Since the management buyback there do not appear to have been any strong attempts to change the culture of the organisation. It is too early to tell what the long term effects of the attempted flotation will be, but there is every indication that the "old style" of operating, so well understood by Virgin employees, has remained intact.

As stated above, Branson's policy is to promote from within Virgin. Since the very early days this policy has remained strong, and is a cornerstone of Virgin, spoken of with pride by employees. The degree of *individual initiative* and *risk tolerance* allowed within the organisation is there-fore unusually high.

"No-one spoke about 'management'; it was simply Richard, Simon and Ken. Staff could feel, in that all purpose adjective, 'involved'" (MB, p.138).

There are strong indicators that the degree of *direction* (i.e. objectives and performance targets), *integration* (i.e. coordination between operating units) and *control* (direct supervision) is quite low within Virgin. This accords with the emphasis on initiative and opportunism. It is clear that, to follow the categorisation proposed by Douglas McGregor, Branson regards people as Type 'Y', i.e. creative and responsible, able to make innovative decisions and exercise self-direction.

The sense of *identity* that Virgin employees have with the company as a whole is very strong. There is a sense of pride in working for such a "relaxed" and "friendly" company - and this compensates for *lower than industry average wages*.

The *rewards system* is not strongly wage-based. Rather the emphasis is on "making it" yourself within Virgin; control and autonomy are seen as rewards in themselves. Many individuals have a personal financial stake in their operating company, and hope to be rich soon on those terms.

Branson has never adopted the flamboyant manners of a company Chairman. His scruffy sweaters are legendary; for many years he lived on a houseboat on the Thames (it is now his office) and drove an endless succession of battered saloon cars. Board meetings have always been traditionally very relaxed. Usually held at one of the directors' homes (in the living room), meetings are interspersed with games of snooker and visits to the pub. The message given out is that these are not the things that matter.

Conflict tolerance would appear to be very high within Virgin, and *communication patterns* are generally flexible and "open". The feeling engendered, which also appears to be a reality, is that Branson is "accessible"; he is always referred to by his first name by all employees.

There appear to be no formal criteria for entry into the company. Recruitement is left to the operating companies, with no formal training or career structure within the company; training is "on the job".

In a company as diversified as Virgin, subcultures are inevitable. No doubt (I can speak from personal experience) Virgin's recording studio engineers feel close to the (strong) subculture that exists across all recording studios. However, beyond this there is pride in belonging to Virgin, "good people to work for", as a colleague once told me.

To adopt rather sweeping generalisations, the culture within Virgin is a curious mixture of boss, peer and task. The lack of strong system allows for a degree of "task" responses to problems, whilst the sense of being part of a team ("all in this together") is very strong. At the end of the line though there is Branson: his readiness to intervene in any crisis and take whatever action is necessary cannot be underestimated.

What is unmistakeable is the fact that the core values are strongly held within Virgin, and this acts much as a substitute for formalisation. Indeed one woman who left Virgin in the mid- seventies likened it to "being in the Moonies".

How Virgin Employees Learn Culture : Culture within Virgin is maintained and communicated by two main means: stories and material symbols. Stories about Branson abound - particularly concerning the early days of Virgin. Many are no doubt apocryphal, but that is not the point. Food fights in restaurants, the inevitable swimming pool incidents, stories of high speed car chases through the Oxfordshire countryside - all add up to the feeling that Virgin is exciting, interesting, dangerous.

A good example of the hold of such stories is the way Mick Brown describes those early days in his biography of Branson. Speaking purely as a biographer, Brown uses emotionally charged language, perpetuating the myth:

"Even as the company got bigger the familial atmosphere on which Virgin had been built in the early seventies stayed strong, a flame that was kept alight by those who had been with Virgin since the earliest

days until it became a myth, self perpetuating and strong enough even to have Richard Branson in its grip... Branson's readiness to delegate responsibility and encourage people in tasks for which they had no particular qualification had been important in determining the mood of the company. By turning packagers into talent scouts, magazine salesmen into managers, Branson had paid them the compliment of saying 'I trust you'" (MB, p.139).

Material symbols are also important, but in a reverse way. As discussed above, the message strongly given is that such matters are *not* important. Branson's attire and the facades of Virgin's buildings constitute strong cultural statements. Everything says "what we *do* is important".

Branson is regarded as a loyal and considerate employer. Virgin's staff are surprisingly young and appear to be committed strongly to the company. Individuals join Virgin for life (many senior staff have been with Virgin since the very beginning) and give their all. In this respect Virgin is not unlike many Japanese companies.

The Psychological Contract: In investigating the implied contract of expectations between the company and its employees it is useful to categorise the latter into senior management and junior employees.

Senior Management: The large number of operating companies within Virgin allows responsibility to be devolved down the hierarchy and distributed amongst a larger group of people. Senior management therefore enjoys substantial freedom of action and responsibility. Financial reward is often performance based and many senior managers have direct shareholdings in their part of the business. This is a very strong component of the psychological contract.

Responsibility is also a function of the cultural environment within Virgin. This environment in itself forms part of the psychological contract. Until 1982 Carol Wilson was head of Virgin's publishing division (she had discovered the singer Sting when he was still unknown in New-

castle). Following a disagreement with Branson she left Virgin in 1982 and joined CBS. It was at this point that she realised just how congenial the atmosphere at Virgin had been compared with CBS, particularly for a highly motivated woman. The difference was sufficiently for her to reopen negotiations with Branson for her return - a haven for "oddballs", as she described it.

Junior Employees: Wage renumeration is more important for junior staff, but there are other important factors. As above, the congenial and relaxed atmosphere is important (it has been described as "chaotic"), but so is the hope of "making it". There is a belief that Virgin will provide the opportunity to rise from a quite junior position to a position of management within a relatively short space of time.

Flotation: In the run up to flotation a deliberate attempt was made to bring the structure and culture of the company in line with the City's expectations. Two non-executive directors were appointed (Sir Philip Harris of Harris Queensway PLC and Cob Stenham, Financial Director of Unilever PLC) and specialists were appointed, particularly to rationalise Virgin's finances.

There is every indication that this attempt to change the culture of Virgin failed:
1) A strongly held culture cannot be changed by decree within a matter of months;
2) the flotation attempt failed; the City remained unconvinced that Virgin had "reformed";
3) the outward cultural manifestations of Virgin have not changed; and
4) the two non-executive directors resigned.

The City has always been wary of the music business, with its fickle ways and high risk undertakings. Virgin was in a particularly difficult position, being an unorthodox company in an unorthodox business. Perhaps therefore the failure of the flotation is not surprising.

Postscript

The above was written at the beginning of 1990. Nothing has happened subsequently that changes substantially my views at that time.

In March 1992 Branson sold Virgin Records to Thorn for £510 million, netting himself £320 million cash. Thorn has subsequently made 88 of the Virgin staff redundant. At the time of writing (August 1992) Thorn EMI's share price is 712p, down from 887p in mid-May. The Sunday Times has referred to Branson's sale of Virgin's music interests to Thorn as "a trading masterstroke, a market move to rival Sir John Egan's sale of Jaguar to Ford for [a massively overpriced] £1.6 billion... A golden rule of this column is that when the owner/founder of a company sells his shares, investors should follow him."

Of the sale Branson has said, "When you're not completely committed to something, maybe it's time to move on to something else". Something else in this case in Virgin Atlantic - and whatever else may come along. Branson has already announced plans to exploit the breakup of British Rail, by introducing Virgin trains on selected routes. "What I love in life is finding out about things that I don't know a lot... I like setting myself the challenge of learning about things and trying to bring something to them."

His personal fortune is now assessed at £1.7 billion.

For those interested in the phenomenon of the alternative (sic) entrepreneur, may I recommend the book *Hard Drive: Bill Gates and the Making of the Microsoft Empire*, by James Wallace and Jim Erickson.

Stephen Rickard
September 1992

STRANGE BUSINESS

the Independent Music Culture in South Africa

Warrick Sony

"...it's a big rock beat on civil rights
Fun with the forces every night
I advertise, I hynotise, reorganise, I sympathise
I'm music pop music I'm a vehicle of the State
Big business approve me, their policies dictate
What harmony and melody
And words that make no sense to me
For the Top Twenty."
From "Emergency Rap", Warrick Sony, 1986

NOTHING IN SOUTH AFRICA is considered to be "Desirable" according to the Publicatons Control Board. There are only two categories, "Undesirable" and "Not Undesirable". My fourth album as the Kalahari Surfers was found to be "Undesirable" not only by the Publications Control Board, but judging by sales figures, also by the public at large.

As an independent producer with a rampant interest in music which is not part of the mainstream, I have discovered that just about everything in this country works against me. During an attempt to register my record label as a closed corporation my lawyers came back to me to report that the authorities would not accept the name I had chosen (Gross National Products C.C.) and that I had to think of something else. (Free State Music was found to be "not undesirable").

I have been involved with Shifty, an independent studio and record company in Johannesburg since 1983. I assisted Lloyd Ross in the early days when he'd just discovered Sankomoto, a band from Lesotho who had said some things on stage that resulted in them not being allowed back into South Africa. We were a mobile track studio then and were able to trek to Maseru to do the recording which to this day is one of Shifty's (and the band's) finest

records. Their lyrics were found to be undesirable and consequently sales were reliant on word of mouth and newspaper reports and reviews.

This was the pattern which all subsequent releases by Shifty were doomed to follow. Radio shunned it all. Payola was something we couldn't afford or morally support. Lloyd was financing most of these projects himself. Then along came Bernoldus Niemand, a man who was sure to win Esme Everhard's approval and get masses of air time on Forces Favourites, her troopie programme for the boys on the border. "Hou My Vas Korporaal" was the single that was chosen. It was another great project to be involved with. I played a bit of trombone on one song and drummed on an ode to Gerrie Coetzee called "Boksburg Bomber". Bernoldus's recordings had a strong influence on the Alternative Afrikaans movement of the late 1980s. Younger and more of a skollie than David Kramer, Bernoldus sang songs that were real. They were South African white trash stories about girls, broken hearts, the army, smoking zol and "die snor gevaar" in Pretoria. He didn't get played on radio either.

Lloyd spent weeks mixing and re-mixing the song to change the lyrics which Tinus Esterhuizen (the convicted paedophile) found offensive. It didn't help. The song was thought to contain a generaly pessimistic view of the army and consequently was unfit for radio. We were told that it had been defaced with a sharp object so that no rebellious DJ's could play it in years to come. Apparently this is a standard practice at the SABC (South African Broadcasting Association) with "undesirable" music.

I puzzled over the nature of our independence as record makers. We were forced to compromise the lyrics to the Bernoldus single to no avail, the title of the LP was going to be "Hooked On Dagga Vol 1" after the "Hooked on..." craze, but it was felt that the CNNA would not carry a record with a title like that and was compromised to "Wie is Bernoldus Niemand". So here I felt we were already bending over and being jabbed in the butt by the very forces we were seeking to be free of. We were behaving like the rest of the industry because we were still slaves to Radio. We were losing the joy of being independent record makers. We had lost the power to say fuck you to the SABC and still had to bend over for people like Tinus Esterhuizen. I decided to do a record of my own that would definitely not be played on Radio. It was called "Own Affairs" and caused a bit of a storm at the pressing plant who found it "undesirable". I had to get it manufactured in England through an English record company, Recommended Records - the beginning of a relationship which lasts to this day. Despite being described by the City Press as "one of the most mature expressions of rhythmic resistance this country has ever seen" it sold only 300 copies. In Europe it sold over 1000 copies. We had to import all copies of the record into South Africa. It was cheaper to call them "vinyl samples" and send the covers separately. They were called "cardboard sleeves" but each shipment turned out to be a nightmare of bureacratic postal engagements which I'd need a lot more space to cover.

A weighty negativity permeates the South African recording scene. It derives from a lack of joy or pleasure one feels in the making of the music. I don't mean the contrived obvious *jiveaspleasure* that the performer has perfected but more the feel of the artist's understanding of the possibilities of the studio environment. No chances are ever taken. Radio calls the shots and the industry demands that the formula is followed. Initiative comes from the new territories charted by successful overseas artists. If I had approached a South African record company with the idea of a collaboration with Mahlathini and the Mohatella Queens they would have thought I was mad but it takes the initiative of an avant-garde British group, Art of Noise, to put together the idea and one of the best Mahlathini tracks ever, "Yebo". The artist removed from that environment and the constraints of the "formula" immediately blossoms forth. Art of Noise are not that far removed from my own area of work. We both cut up PW Botha's State of Emergency speech and put a funky beat to it. Being a South African I think I understood the meaning of that speech much better than any group outside the country.

A concise history of independent record making in South Africa probably amounts to a few typed A4 pages. Interest is such that these would have to be privately photocopied, and given away free to people who would never read it. For a country which prides itself in its love of music we are sadly lacking in interest and imagination for anything that truly breaks new ground. The long years of cultural isolation cannot be blamed entirely for this though I believe that it has had a lasting stunting effect on the ordinary growth of the artistic imagination of our people. In all types of music; I have yet to see a South African free jazz ensemble or a multi media performance embracing different disciplines - classic/jazz/african/electronic... is it so off the wall? I don't think so. Musicians playing totally off the wall music in New York make a decent living. We do not even know they exist. Phillip Tabane struggles to get a decent audience here. A unique performer and the last remaining exponent of the African avant garde in South Africa, he draws better crowds in England. When I saw him play to a packed venue in Brixton, London, I was struck by his strength of commitment to the spirit of no compromise. Here is a man who should be at the centre of an African experimental music movement in his own country, but local Industry and Radio deem it unmarketable.

The cultural boycott ironically has assisted the State in limiting our collective imagination. They of course took the gap and through their Broadcasting Corporation fed the people a diet of dubious consumerables. Even the Soviet Union is more part of the global village than we are. I was invited to play in Moscow at a festival of independent music. I saw a group called

Ne Zdhali who had copied Johnny Clegg's Zulu dancing. I spoke to them afterwards and they said they had seen him on a Finnish TV broadcast. They were from Estonia. Anything was possible in Russia because they had no industry to speak of. There was only one record company called Melodia (State owned) who ignored most underground music. Consequently there was no self-censorship and musicians tended to experiment in all sorts of strange and weird ways. I saw a group called ZGA who made their own electronic instruments... a weird scaffold of bits and pieces that produced fantastically controlled and atmospheric music.*

In 1989 I came across a group here called KOOS who for me were one of the best exponents of the concept of alternative Afrikaans music. The language is perfect to convey white South African angst. One of the most hard edged bands I'd ever heard. Very dissonant but very memorable chant-like tunes roughly executed. Words drawn from the writings of Ryk Hattingh, Chris Van Wyk and Johan van Wyk. I recorded them one weekend. Shifty weren't wild about it and it was decided that a record was a bit of a waste of money. A cassette was released in a brown paper bag. Out of all the alternative Afrikaans music to gather momentum at that time KOOS were perhaps the most radical, so much so that they were considered a bit heavy for the Shifty Records Voelvry Tour. This was disappointing as I felt the band could have been quite inspiring for a lot of people (and would have sold some of the cassettes). KOOS suffered a huge setback when Andre Letoit decided to change is name to "Koos Kombuis" and released an LP under that name. The confusion was too much and the band disbanded. They were the alternative to the alternative.

During the years of isolaion and turmoil it was easier to define alternative music. Anything that was politically centred, which strove to capture the feelings and images of our own microcosms, anything with relevance could be called "alternative".

It was that, which a State that could not tolerate criticism of itself, would have had to crush and condemn. As it was, Radio did it for them. The record companies would not record music which could not be played on the radio (they still don't). One who places unnecessary obstacles on the road to success is surely foolish. South African popular artists, in their desire for mainstream success, chose to ignore political content in their music. As a result the archive of resistance songwriting is very thin. Sure the jazz guys came with numerous jams and melodies with titles like "Song For Winnie" etc. but I am talking vocal song with penned words like the wealth of political songwriting which blossomed from places like Chile and Nicaragua. I worked on numerous foreign documentaries that inevitably tried to unearth this music. Foreign producers couldn't accept that the form did not really exist. There were Worker Choirs and poets with strident political slogans, BC jazzmen, but where was our Thomas Mapfumo or our Ruben Blades, the song writers, the balladeers, like the Bluesmen of the American Twenties, like the hundreds of radical songsters in Papa Doc's Haiti? Where were the soul rebels?

Perhaps they were on a different stage. Theatre has been the most radical of the arts in this country and has the best track record for creative struggle culture. This is because it has never been seen by the State as a major problem because it cannot be mass produced in the same way that a book or a record can. One of the key reasons that the State unbanned my fourth LP *Beachbomb* was the fact that I had never sold more than a thousand copies of any of my records. If the system works on its own there is no need to ban records or anything. Without access to the means of proper promotion, especially broadcasting, it will effectively die its own death. In theatre the limitations of audience size and ticket prices always kept the wild youth at a distance. Imagine then a free concert in a stadium packed to capacity and a performance of some of the most

politically savage poetry attacks on Apartheid ever. This was Mzwakhe Mbuli's stage and his audience were the young comrades from the townships. A tall elegant man of powerful voice, he had just about every struggle youngster wishing they were him. His first cassette "Change Is Pain", recorded by Lloyd at Shifty, was banned outright. It was 1986 and the State recognised a powerful popular threat to their security. They removed him from circulation. He spent two long stretches in detention, doing months in solitary confinement, during which time he prepared material for his second work, "Unbroken Spirit", released in record to be Shifty's biggest selling record ever. To date both of these albums have gone Gold (sales in excess of 25,000). All this without radio. Mzwakhe should have been happy. He wasn't.

Something of an overnight success phenomenon had hit Shifty and like many small independent labels the world over, their paperwork was in disarray. Lloyd, trusting in the "buddy" system, left things fairly informal. The company had footed the bill for all the recoridngs and took the risk. There was some interest in Germany and "Change Is Pain" had been released there by a tiny independent. I was still selling more Surfers there than they were selling Mzwakhe. I myself had never signed anything, not with my overseas connection nor with Shifty. This was to my advantage as it meant I could drop everything and go with a major if an attractive offer came through. A serious lack of communications got Mzwakhe paranoid that the whites were ripping him off. Things went sour. He never appreciated the spirit of the small independent record company. Understandably his influences had nothing to do with the punk/new wave music revolution that swept Europe and America; the do-it-yourself attitude that inspired us to tackle recording and releasing music for no other reason than the joy and fun of it. We were from different worlds and Lloyd made the mistake of thinking that we were all pulling together in the same direction. Mzwakhe had a dif-

ferent agenda and in the end it was the race thing that nailed Shifty to the wall. We were whites and traditionally, even historically, it is always the white record companies that rip off the black artists. Who'd believe anything else? It was a cheap shot and we were an easy target.

Mbuli used his position on the Cultural Desk to try to block various other Shifty projects. Some were things that he'd agreed to be involved in. One was to make available at cost all the speeches of the recently released leaders, and to set up an infrastructrure to speedily record and mass produce these vital oral gems of our history. Predictably, Mbuli accused us of political opportunism, but I think the worst we could be acused of was naivete. Like most people in the country we were swept away by the euphoria of the times. I stood outside Sisulu's house after he was released. I stood in the sun outside Victor Verster when Mandela walked out to freedom. Our whole lives we'd been wiating for this. I wanted to use my skills in the service of this great historical movement forward. Combining my tape editing skills together with Shaun Naidoo's keyboard skills we released a cassette of funky electro dance mixes featuring excerpts from the speeches given at the welcome home rally for Sisulu, Kathrada and six others. It was called "Urgent Release", proceeds of which went to the fund set up for released detainees. It sold reasonably well, again without radio play.

The elation of those days is over. Shifty took some flack in the press. Other artists followed Mzwakhe in search of the Big Record Deal. The Genuines, Noise Khanyile, Simba Morri. I spent a fair amount of time and energy on the cover and promotional material for the Tananas album. After the ground work was done they too left for greener pastures, breaking a verbal contract and wasting months of studio work that Lloyd had done completing their second album. Even in the early days Sankomoto were the recipients of the first ever Shifty Record contract but it wasn't worth shit when the band went overseas and happily ignored it. This is not a problem unique to Shifty. Small independents overseas also struggle to keep successful artists with them and if company management is shaky, professional artists need to move into infrastructures that can give them more security and ultimately more money. With the realisation of one's creative potential an urgency seems to set in where the artist is frustrated at the slow pace of his/her development with a not quite professional organisation. The series of destructive attacks against Shifty have sadly collapsed the energy and momentum of the earlier days.

As for myself... I was employed once by Shifty and drew two months of salary but I prefer a quiet seat on the sideline. I have a financial investment in the studio and the record company owes me some good will for work and commitment during the earlier more fun-filled years. I am an artist and continue to produce occasional independent music that takes my fancy. I have recorded an artist from Tembisa called Petric Mahlalela who with his group plays a fascinating cross over of Tracy Chapman and Stimela. I battled to get interest from Shifty and the majors are wrapped up in their own work. The master tapes are mixed but I have no money to conclude the project. Another project is a collaborative work with poet Lesego Rampolokeng. The German Embassy came forward with a tiny amount of development money but still no one is interested in putting money up to do a proper LP and CD. We'll probably do a limited edition of cassettes. This is outstanding work and the sort of thing arts councils in developed countres would fund. I find it impossible to do these things alone. They would also not get radio play. Shifty is now moving towards licensing overseas catalogues and trimming down local unmarketable artists. Where does that leave the independents? What independents?

It's a strange game this music business. We visited Alex Jay's studio some weeks back.** He has a partnership with three or four other people situated in Houghton. In the entrance hall I noticed a number of gold and platinum disc awards hanging on the wall. I wondered how a Disc Jockey manages to get a gold record and strolled over to read the little brass plaque. It was awarded to him for his hard work in helping sell in excess of 50,000 records of the Australian group Midnite Oil.

* See elsewhere in this issue and their track on the accompanying CD.
** Alex Jay is a famous DJ and now TV music personality.
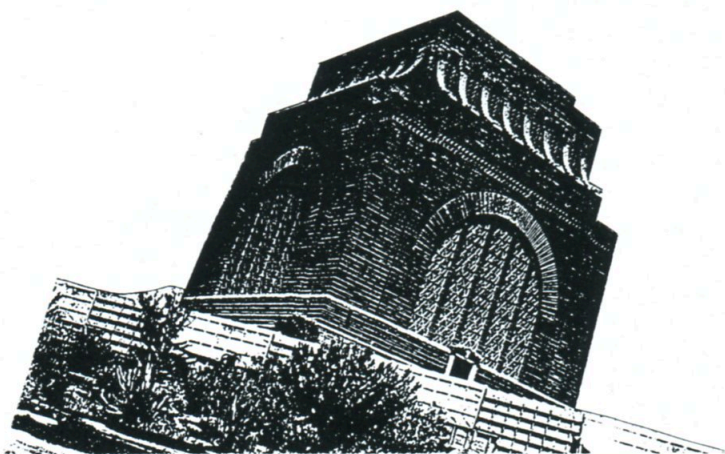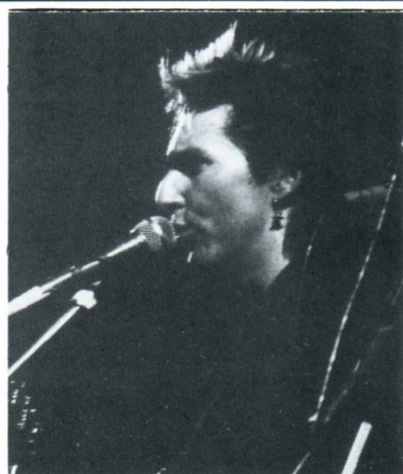
How to be in a pop group
part 2
Alan Jenkins

11. Record companies

A lot of bands spend all their time trying to get signed up by a record company. Don't do this, it's a depressing waste of time, get on with playing some music instead. In particular never send any record company a demo cassette; they don't listen to them, most of the time they can't even be bothered to throw them in the bin, they just put them in a drawer and forget about them. People who work for record companies think that demo cassettes are the most boring thing in the world, they would rather listen to a ten record set of the collected speeches of Roy Hattersley. If you send them a demo tape they will despise you. If you ring them up and ask them what they thought of it they will go straight into a zombie like coma and start repeating phrases like "oh yeah, Dave took it home with him and he's away this week, could you ring back next April?" They will not even be aware that they are telling you a string of lies because their brain will be fast asleep. Repeat: never send demo tapes to record companies, you will end up going mad and killing yourself.

Big record companies are organisations which exist to make money by selling records to people. They don't care what kind of records they sell as long as they sell a lot of them. This means that no big record company will be at all interested in your group unless they think you sound like the average chart band; ie: they think your music is bland, moronic crap. So if your music has any merit you can forget signing to a big record company; even if all the members of the band are exceptionally pretty with nice hair cuts.

(If by some freak chance you do get the opportunity to sign a record contract however, it is a good idea to do it because it might make you a bit of money in the long run. Putting aside for a moment the fact that you will inevitably be shamelessly exploited and manipulated, you will also get something worthwhile out of the experience even if it's only a new guitar. The only dilemma here is whether or not a new guitar outweighs having to come into close contact with some of the most appalling people currently allowed to roam free. People who work for big record companies are like people who work in advertising but without the subtlety and integrity. None of this will ever happen to you though, with any luck, so there's no point in going into this in any more detail.)

It's more likely that you will come into contact with small record companies - "independent record companies" as they are known. Some of these would really like to be big record companies but are too incompetent, and the people who run them are slightly less corrupt, deceitful and horrible. Signing to one of these is similar to signing to a big record company except that you won't get a new guitar. They might arrange for you to tour Borneo though which could turn out to be quite fun.

The other kind of small record company is very small indeed. These are run by people who are more interested in music than in selling records so consequently they hardly ever sell any records at all, especially not by your band. You might as well form your own record company (see chapter 13) as sign to one of these. I say "sign" - this kind of record company don't usually have written contracts - they don't know what one is. If you do find a record company like this who wants to put out records for you you might as well let them if only because you won't have the hassle or the financial risk of doing it yourself.

12. Recording

All pop groups should record whenever they have something new which is worth preserving. Some groups don't record; this seems rather like Vincent Van Gogh painting pictures using paint which disappears three minutes after hitting the canvas, but the groups which don't record much are usually the ones who sound exactly like Happy Mondays, and the reason that they don't record much is because they are too busy sending demo tapes to record companies and trying to get gigs in London which a man from the NME will come to. We should be grateful that more of them don't make records.

There are two ways to record. You can hire a recording studio, or you can buy some recording equipment and do it at home. The first way is less expensive in the short term and doesn't require any technical knowledge because there will be someone who works in the studio to press the buttons for you, and the results can be technically better in some respects especially if you hire an expensive studio full of very expensive equipment. If you buy your own gear, you will probably have to make do with something inferior, but because you can spend as long as you like messing around with it, the chances are that (unless things like the frequency range of the bass guitar are very important to you) you will end up with something you like better.

Apart from the pressure of time, the biggest problem with using a commercial studio is the resident engineer. His favourite music will almost certainly be jazz-funk and he will want you to make a jazz-funk record. Some engineers who want you to make a jazz-funk record a lot will even go to the extremes of insisting on playing all the instruments and rewriting the songs. The trouble is that studio engineers are very friendly people who are very easy to get on with. This is part of their job, they have to be so amiable

that when Napalm Death go into their studio they can persuade them to make a jazz-funk record. This is a danger of which you must beware; you must resist the temptation to play jazz funk to please the nice engineer. It's best to have a firm idea in your mind of what you want your record to sound like before you go into the studio and not be afraid to tell the engineer what to do at all times. Eg: when he says "I think there should be a bit more chorus on the guitar to make it sound less spiky" you should immediately reply: "If you put any chorus on the guitar whatsoever I shall be forced to shoot you through the back of the head with this cross-bow." (Always remember to go to the studio armed in case this occurs). Sometimes all of this can happen on a more subtle level. The engineer may fail to mention that he's put chorus on the bass, gated the snare drum to make it sound like one on a Bon Jovi record, turned down the guitar solo in the mix so that you can't hear it and replaced the vox organ part with one he's done himself on a polysynth because he thinks it sounds more professional. You will not necessarily be aware of any of this because, not being familiar with the controls in this particular studio (all studios are different and tailored to suit the engineer) you won't know what he's really doing with his hands at any given moment. The only thing to do is keep your ears open. Say: "the guitar sounds a bit soft, could you make it a bit more spiky?... no even more spiky than that... yes, that's better, just a little bit more spiky though... I don't believe you, I think you can make it more spiky if you want to... look, who's paying?" and things like that whenever necessary. With practise you will be able to do this with as much charm as the engineer has when he says things like: "This is a really good guitar solo and you are probably the most talented musician I have ever met, let's try a bit more chorus on it"... but in the mean time go armed.

If you can afford any recording gear at all it's probably best to record at home instead. Drums provide the largest practical difficulty as usual because most people don't live some-

where where a drum kit will even fit let alone somewhere where you can play one without the SAS parachuting in to arrest everybody. To record a drum kit properly furthermore, you need about eighty seven microphones, fifteen noise gates, ten compressors and a crowbar to hit the drummer with to stop him playing the snare drum when you're trying to listen to the bass drum. Apart from this the hardware requirements for home recording aren't too excessive. You will need:

1) A multi-track tape recorder. "Multi-track" means that you can record different things on different tracks at different times. A normal domestic cassette recorder actually records four different things on each tape - first you record right and left stereo tracks on one side of the tape and then you turn the cassette over and record right and left stereo tracks on the other half too. A four-track tape recorder does the same thing except that it only records in one direction (you use up the whole tape without turning it over to play the other side) and you record something different on each of the four tracks in mono, either one at a time or all of them at once or anything in between. And you can synchronise the tracks - in other words you can record a guitar part on one track, record a keyboard part on another track, and when you play them back the two parts are still in time with each other. Eight-track, sixteen track machines etc all do the same thing only with more tracks. (Generally the more tracks you have, the wider the tape has to be to fit them all on. Some sixteen track and twenty four track machines for instance use two inch wide tape; normal cassettes use tape which is just over an eighth of an inch wide). Anyway, the idea is that you record a different instrument on each track and then you can decide how loud you want the instruments to be in relation to each other afterwards. Most home recording is done on "portastudios" which are four-track cassette machines combined with small mixing desks. These are cheap and simple to operate but limited; You would get better sound quality from an open reel four-track

(because the tape is wider and also it goes a lot faster) and you would be able to record more different things on an eight-track, obviously.

2) Mixing desks. As mentioned previously, if you have a portastudio it has a mixing desk built into it, if you have an open reel multi-track tape recorder you will need to get a separate one. The mixing desk plays two parts in the recording process, firstly you record the instruments and singing through it onto the multi-track, and then, when you've filled up the multi-track with all the different elements of your piece of music, you play them all through the mixing desk onto the final master tape. The master tape will be recorded on either a normal cassette recorder or, more usually on a two track open reel tape recorder. (Two track means that it uses the entire width of the tape for just the left and right channels of the stereo - you only record on the tape in one direction). To get back to the mixing desk - it's divided up into a number of channels - when you mix down your multi-track recording onto the master tape each of the tracks goes through a different channel on the mixing desk and you can change the sound of each track independently of each other. The knobs on the channels of the desk allow you to alter the volume and the tone of each track and to control how much of certain effects, principally "reverb" you have on them. Most mixing desks allow you to plug one or more effects directly into them in such a way that you can have a different amount of the effect (from none at all to tons of it) on each track. There's a knob for controlling this next to the tone controls and the volume control. You also get a knob for controlling the panning of the track, (where it appears in the stereo picture). Being able to place things where you like in the stereo allows you to build up the illusion that each instrument is being played from somewhere different in the room. This helps you to hear everything clearly and makes things sound generally more interesting. Especially when listening on headphones - if you listen to a mono record on headphones it sounds like you are having a migraine attack.

Don't listen to anyone who reckons they prefer mono recordings, they are stupid.

3) Some effects. The only essential electronic effect you will need is reverb (short for reverberation). This makes things sound as if they are happening in a cave if you use enough of it. If you don't use any at all everything sounds as if it's happening sellotaped to the side of your head. Somewhere between the two is best in most cases. It sounds especially good on singing. Other effects, roughly in order of usefulness are:

a) Compression. This will make some instruments much easier to record. It squashes down the loud bits so that they're not too far away from the quiet bits. If you don't use this on the singing for instance, you may find that the quiet bits are completely inaudible when the loud bits are at the right volume. It's also handy for guitars.

b) Noise gates. These cut out all sound below a certain decibel level (you can adjust the level at which they start to work). This is useful for cutting out extraneous noise in places where nothing is happening such as in between lyrics on the singing track. You can automatically cut out the singer breathing heavily, stifled laughter during the guitar solo etc. Don't use it for cutting off the reverb on the snare drum as it starts to fade away though unless you want to make some awful disco record.

c) Delay effects. These are used for making things echo and for chorusing and flanging.

d) There aren't any more effects, well, not really.

e) Unless you count noise reduction... When you listen to an analogue tape recorder (one that isn't digital), along with the music recorded on the tape you also have to listen to the tape itself scraping across the play-back head on the machine. This sounds like hissing - which is why it is commonly known as tape hiss. It stays at the same volume all the time and so you don't notice it when the music is loud enough to drown it out but it's a bit annoying when the music is very quiet. However, many tape machines are fitted with noise reduction circuits. These

work by making the high frequencies in the music (the ones in the same frequency range as the tape hiss - mostly cymbals and the vocalist singing the word "trespassing" etc) louder while you are recording them; then when you play the recording back the noise reduction makes the same frequencies quieter again, and it makes the tape hiss quieter along with them. This is alright except that not all noise reduction works terribly well; it takes a bit of treble away from the music when it isn't supposed to for instance. But it's usually best to use it at least on the multi track. Also, they keep inventing new and better noise reduction systems, Dolby S is the latest one, so by the time you read this... well... everyone will have been killed by a deadly virus from outer space I should think.

For a couple of hundred quid you can get a thing called a "digital multi effects processor" which will do high quality versions of all of the above effects (except noise reduction). Thanks to the wonders of modern technology many people have in their homes recording equipment which is superior to that which could be found in the most modern commercial studio in say... oh... 1852.

4) A microphone. Any instrument with an output socket on it can be recorded by plugging a lead from it straight into the mixing desk. It's much easier to record things like this if you possibly can. You can't do it with singing or real drums though, and it's best not to do it with guitars because they tend to come out sounding a bit weedy. (You may want a "clean" guitar sound of course in which case it's ok; or you may want a serious brain operation which would also explain it). NB: bass guitars sound better if you plug them straight into the desk, those low frequencies just get in the way of everything else if you make them sound any fatter. To record a drum kit you will need several microphones, but otherwise, as the vocals aren't usually recorded at the same time as everything else, you can get away with just one.

5) A two track tape recorder (this was mentioned in the mixing desk section). You don't have to "master", or record the finished product, onto one of these necessarily but the sound quality is much better than a cassette machine, you can edit the tape on it - this will be necessary at some point, and if you want to cut a record from the master tape this can only be done from open reel half-

The Tungsten Railings

CUT OUT 'N' KEEP ☆ SOUVENIR PIX OF YOUR FAVOURITE BEAT COMBO!

Collect The Set.

ILLUSTRATIONS BY FRANK KEY

track tape.

6) More bits of wire than you would have imagined. Everything has to be connected to everything else using at least one lead, and most of them seem to need different kinds of plugs on the end of them. Be careful not to connect your dog to anything by mistake.

7) Another useful thing to have if you absolutely insist on using modern synthesisers is a MIDI sequencer. MIDI stands for Musical Instrument Digital Interface. It's a standard thing among modern electronic instruments and bits of recording gear and it allows all of them to be connected together in various ways. You know the way that you can connect any bits of hi fi equipment together using phono leads? Well it's a bit like that only more complicated. Eg: you can put a midi lead (these look like five pin din leads) into the "MIDI out" socket on one keyboard and into the "MIDI in" socket on another keyboard and then play the second keyboard's sounds on the first keyboard. Or you can play a drum machine from a synthesiser keyboard or you can get a digital guitar which has MIDI and play the sounds on a MIDI sampler with it. (Actually I wouldn't bother with MIDI guitars because no-one has invented one which works properly yet). The most useful thing about MIDI is that MIDI information can be stored on a MIDI recorder or sequencer. Consider the player piano... this is a normal piano which can be operated from a long piece of paper with holes punched in it. A complete performance is recorded on the piece of paper - the notes that were played, how long they lasted and how hard the keys were hit (how loud the notes are). The result sounds better than listening to a recording because you are listening to a real piano playing an exact replica of the original performance rather than an electric impression of the same thing coming out of a loudspeaker. This is also how MIDI sequencers work; they store MIDI information, not sound. When you record a keyboard part on one you can treat the sequencer as a normal tape recorder - you connect MIDI out on your keyboard to MIDI in on the

sequencer, you press "record", play your part and then press "stop". When you want to hear it back you connect the "MIDI out" on the sequencer into the "MIDI in" on the keyboard and the sequencer plays the keyboard exactly like you did. You can record lots of other keyboard and drum parts too - the number of different parts you can add is only limited by the size of the sequencer's memory, and you can assign particular parts to particular instruments by assigning MIDI channels to the parts. There are sixteen MIDI channels; you make the drum part channel one and set the drum machine to receive on MIDI channel one, and the drum machine won't attempt to play the keyboard part which you've put on MIDI channel two. This sounds really boring and complicated if you've never heard of any of it before, but remember, these machines are designed for members of Iron Maiden to use, so how hard can it be? Anyway, (assuming you like synthesisers and drum machines) this is all very handy for saving tracks on your multi track tape machine because you can synchronise the MIDI sequencer to it by recording a synchronization code, a bleeping noise which the sequencer puts out, on one track - so all the keyboards and drums only take up one track. And the other handy thing about MIDI sequencers is that you can edit the music electronically. You can change anything about it you like after you have played it; you can change the tempo, transpose the key, quantise it (make the timing more accurate by shifting all the notes to certain subdivisions of bars), and change the pitch, timing, length or volume of any individual note - eg: remove a wrong one without having to play it all again. You can also copy sections of music, so if you want twenty seven repeated choruses at the end you only need to play it once and then copy it twenty six times.

Some people think that this sort of thing is cheating. These people don't deserve to listen to music. They should be forced to hand in their ears at the nearest police station and wear signs round their necks saying "I AM TOO STUPID TO

LISTEN TO MUSIC, PLEASE HIT ME ACROSS THE HEAD WITH A BLUNT INSTRUMENT".

NOTE: Altering music electronically is only "cheating" if music is a test to find out how clever musicians are. It isn't.

That's about everything you need to record music. Some people say that the improved sound quality of a commercial studio with millions of pounds worth of computerised mixing desks and digital 36-track tape recorders is absolutely vital, but they only want this stuff to make up for their pathetic inability to write good songs. In an ideal world all expensive recording facilities would be owned by the state and studio time would be apportioned free to musicians using the criteria of whether or not they had anything to say. Michael Jackson would have turned up to record "Bad" and been sent home to write some better songs. The man on the door would have said "I'm sorry Mr.Jackson, we have listened to your home demos and we couldn't possibly let you record anything so vacuous and boring, besides, we have just discovered a band from Tierra Del Fuego called The Hollowed-out Fossilised Pigs who have some very salient points to make about chicken farming and an interesting new vibraphone technique, and they are going to be using this studio for the next three weeks".

If you think this sounds a bit Stalinist consider the following:

a) If the Hollowed-out Fossilised Pigs turned up at Michael Jackson's favourite studio to record the most brilliant music in the world under the current system they wouldn't even have been allowed to stand in the car park.

b) Under this other system Michael Jackson would at least have been given the chance to make one record without having to submit demo tapes to prove he was worth the studio time. No-one would stop him recording "Bad" at his own expense anyway.

13. How to make an album

The record album became an art form in its own right in about 1967; the Beatles' "Sergeant Pepper" is usually thought of as being the first one. What distinguished Sergeant Pepper from most previous pop L.P.s was the way in which its creators regarded it: - as a whole work rather than a collection of songs. This was an approach which the Beatles had been evolving gradually since their Rubber Soul LP in 1965. Other people had been heading in the same direction too; The Beach Boy's "Pet Sounds" LP is often cited; although thematically cohesive in a less obvious way than Pepper it stands apart from the rest of The Beach Boys' records, and everything else going on at the time, because of all the peculiar production and compositional techniques which Brian Wilson was getting up to. Another example of a pre-Pepper "album" was "Absolutely Free" by The Mothers of Invention which did have themes carried on from song to song plus a planned overall structure.

But the point is that when the famous Beatles record came out everyone said: "ah ha, the long playing gramophone record in pop music is no longer a thing for putting half an hour of your latest songs on, it is now an artistic medium". They weren't about to say anything like that about a Frank Zappa record no matter what kind of a new art form he'd invented because he was well known for being an outrageous weirdo, but everybody liked the Beatles. Also the Beatles had put a lot of work into their album and produced something pretty impressive.

So: before Sergeant Pepper the art form was "the pop song" (or the single), and after Sergeant Pepper the art form was "the album", a more substantial and complicated work which could rival operas and novels for the attention of serious television programmes on BBC2. As no musician can resist the flattery of having his work analysed by people sitting in leather chairs and wearing glasses, the new form found wide appeal.

[By the way, a record "album" is the same kind of thing as a stamp "album". In America in the forties a record album was a bound volume of 78 rpm discs with pages which were sleeves for the records. As 78s only lasted about six minutes a side you needed a whole book full of them for a long classical piece. When L.P.s were invented in the early fifties they were designed to be the right length for the average classical symphony, about forty minutes, so the length of the modern pop L.P. was decided by Beethoven in the early nineteenth century.]*

This is how to make an album:

1) Write some songs and record them. You don't have to have a grand concept in mind all along, unless you particularly want one... or wake up in the middle of the night and realise you've got one... or steal one from a book of poetry... or buy one from a grand concept shop etc. Continuity of style tends to happen naturally if you're working on an L.P.s worth of songs all at the same time, possibly also continuity of lyrical themes: - say if you wrote all the lyrics while watching a James Bond film and borrowed heavily from the

* As was the CD, the criterion for which was that it could contin the whole of Beethoven's 9th Symphony. *Ed.*

dialogue, or if your only interest apart from music is knitting and you find yourself naturally drawn to that subject every time you pick up a pen.

Anyway, you will need about forty minutes of music to fill up an L.P. In the early sixties it was common for L.P.s to be a lot shorter, often no more than thirteen minutes a side, but with improvements in pressing technology it became possible to fit on more music and still retain a reasonable number of decibels and a wide frequency range, so these days L.P.s which are less that seventeen minutes a side don't seem like very good value. An L.P. side longer than about twenty three minutes may lose a bit of sound quality.

2) Work out a running order. This is fun, it's like doing a big jigsaw puzzle but with no rigid rules about which pieces fit where. You will find that some tracks sound like good endings or beginnings for sides. So - put the anthemic show stopper at the end of side two, the brisk catchy one at the beginning of side one, or maybe the anthemic show stopper last but one on side two followed by the light hearted waltz about rabbits for light relief, or maybe the anthemic show stopper at the end of side one

1. RIKKI GLUBB

LEAD GUITAR & POINTILLIST
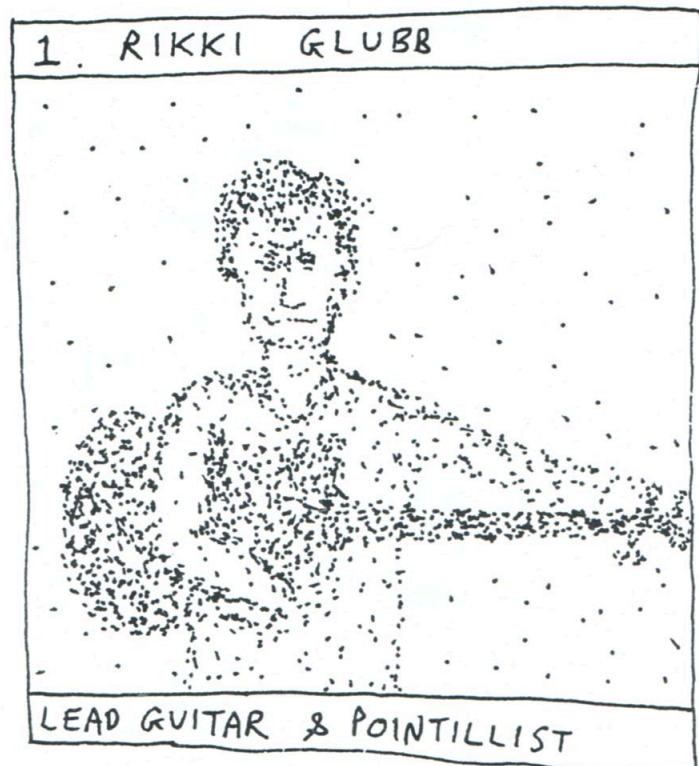
with the light hearted rabbit waltz at the beginning of side two and have it leading into the noisy seven minute number which starts with the heavily distorted soprano sax solo. Then when you've worked out a plan like this you edit the tracks together in this order and see what they sound like. If you don't like the way some of the songs fit together you can go away and re-think part of the running order.

3) You will find it easier to create an interesting running order if the length of the songs varies a fair bit – ideally some one and a half minute tracks and some seven minute tracks. If all your songs last three minutes things will be in grave danger of becoming boring. The best thing to do in this situation is cut some of them in half by editing bits out, and link some others together.

It's a good idea to have some non-song tracks handy to break up the monotony of having one song after another all the way through the record. These can be anything: interesting noises you found while walking through an industrial estate carrying a cassette recorder, experimental pieces made by taping a Kylie Minogue record and then cutting it

to ribbons with a razor blade – putting bits on backwards etc, weird poetry recited to the accompaniment of bag pipes. Anything. This sort of thing can also be used to make the structure of a particular song more interesting by editing it into the middle of it. So it might go: Verse/Chorus/solo/hooting owls and agricultural machinery/chorus or something like that. Another good trick is to start the L.P. with the hooting owls and agricultural machinery; this will scare crap out of any Dire Straights fans who accidentally put the record on. (You can tell when Dire Straights fans have had the crap scared out of them because they will look uncomfortable and ask to hear something they "know" instead).

4) There is only one completely inflexible rule about making albums. NEVER make an album with six tracks on each side. In any reasonable society this would be punishable by law and carry a lifetime ban on making records. To illustrate this point here is a list of ten albums which do not have six tracks on each side followed by a list of albums which do. In the first list the title of the album is followed by the number of tracks on each side.

Albums without six tracks on each side:
1) THE BEATLES "Revolver" (7/7).
2) ELVIS COSTELLO "Get Happy" (11/10).
3) ROBERT WYATT "Ruth is stranger than Richard" (4/4).
4) THE PIXIES "Doolittle" (7/8).
5) HATFIELD AND THE NORTH "Hatfield and the north" (7/8).
6) ELECTRO HIPPIES "The only good punk..." (16?/16?).
7) ALVARO "Drinkin my own sperm" (4/3).
8) FAUST "The Faust tapes" (?/?).
9) THE SMITHS "Meat is murder" (5/4).
10) SOFT MACHINE "Volume two" (10/7).

Albums with six tracks on each side.
1) JASON DONOVAN "Ten good reasons".
2) NEW KIDS ON THE BLOCK "Hangin' tough".
3) TOP OF THE POPS ORCHESTRA "Hot hits 16".
4) SERGIO MENDEZ AND BRAZIL '88 "Go latin".
5) ? "Sounds like Slade".
6) VERA LYNN "Golden greats".
7) MAX BYGRAVES "Singalong-awaryears".
8) RICHARD CLAYDERMAN "The love songs of Andrew Lloyd Webber".
9) JAMES LAST AND HIS ORCHESTRA "...play the hits of the Nolans".
10) L.S.O. "E.T. original soundtrack".

So, which list would you like your album to be in?

5) Design a sleeve and a pair of labels. This is simple enough as long as you remember not to put a glossy, soft focus colour photograph of the band on the front of the sleeve. There is a certain amount of information which is usually included, but hardly any of it is absolutely necessary. For instance:

a) The name of the band. It's best to put this on the front if you want anyone to buy it; unless you are as famous as Led Zeppelin.

b) The title, otherwise people will think it is just called after the band.

c) A list of the tracks. It's best to set these out neatly in a block, in-

2. MAISIE CORNCRAKE

Tungst R

DRUMKIT & CUBIST
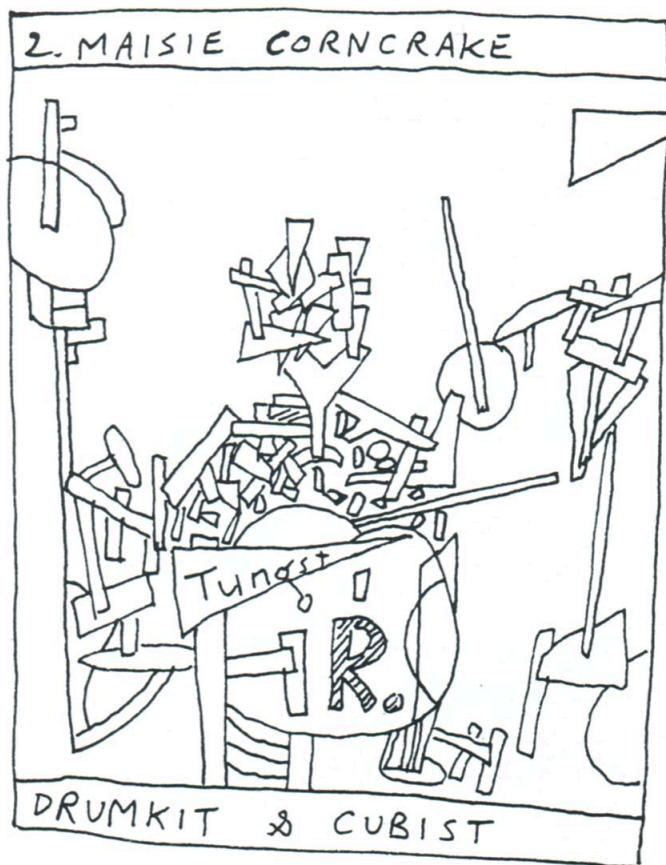
cluding the lengths and numbers of the tracks.

d) Credits. The drummer will sulk if you don't put his name on the back; but under no circumstances write: "special thanks to Bez, Jiz, Gozz, Geoff "give it a bit of stick" Johnson, Sue for making the tea, Nez, Kipper, Rob "more reverb" Bilston and Sam the dog".

e) Sleeve notes. You can include some of these if you really feel anything needs to be explained. One thing to avoid here is asking your friend the local disc jockey to write sleeve notes; he will write: "Hull isn't exactly the name which springs most readily to mind when hard rockin' is mentioned but when I first heard The New Modern Pop Cats down at my local pub the rafters were really moving... the twelve hot numbers contained on this prime slice of vinyl are evidence enough that the Hull music scene is alive and kickin'"... which is practically the same thing as printing "This record is utterly dismal and generally less fun than hanging yourself" in big letters on the cover. Another thing to avoid is the "Bob Dylan-Bringing it all back home" surreal sleeve note style which was ok when Bob Dylan did it in 1965 but has since been done to within an inch of its life.

f) A copyright warning. These have no point. They just sit there looking ugly, like a dead fly squashed on the sleeve. Don't include one.

g) Other things like the name of the record company and who wrote and published the songs. There are technical reasons for these - see the chapter on publishing.

h) Your address - if you want people to write you nice letters saying they think you are jolly clever.

After you've made two or three albums and are starting to get good at it, you may be ready to think about making a double album. The double album is the ultimate art form in pop music and every band should have the ultimate aim of making one. A double album is to an album what a feature film is to a short television drama production. It has scope, depth and mystery which a single album lacks. The panoramic range of a double album should stretch out before the listener like a vast, alien supermarket full of hitherto unknown exotic items, each one of which demands detailed investigation. The contents of four whole L.P. sides packed with ideas can't completely be grasped until the record has been listened to many times. (This is if you do it properly of course; double live L.P.s by grotesque heavy metal bands with colour snap-shots of the band posing all over the cover don't count).

Prime examples of the genre are: Captain Beefheart's "Trout Mask Replica", "Tago Mago" by Can, The Crass' "Stations of the Crass" and "Uncle Meat" by The Mothers of Invention. It's difficult to think of many good examples which were made later than the early seventies, and the blame for this rests with Yes who made a double album called "Tales from Topographic Oceans" in 1972. This brought double albums into disrepute by claiming to a sophisticated and intellectual work of art, (it said so in the sleeve notes), while being blatantly obtuse and juvenile. After this, anyone making a double album would automatically be called pompous and pretentious no matter what the record sounded like. From 1972 onward no music journalist, when given anything more intelligent than a Clash album to review, could resist showing it the "Pompous and Pretentious" card. It was so much less effort than sitting down and listening to it carefully. Another knee-jerk reaction to double L.P.s goes: "It would have made a better single L.P." This is a fatuous remark which can be translated as "I have the attention span of a newt". It was even levelled at The Beatles' "White Album". This is one of the best records ever made, but obviously, if you remove the best fourteen tracks and turn them into a single L.P. the quality will be consistently higher. If you take these fourteen tracks and remove the best four it would make an even more consistently good 12" single; the only problem is that by this time you will have thrown away twenty six brilliant songs. What sort of idiot would want to leave "Why don't we do it in the road?" and "Revolution 9" from the white album on the grounds that they don't like them as much as, say, "Dear Prudence"? A pop music journalist who can't think of anything sensible to write possibly.

3. TEX CRIMEBATH

SACKBUT & SURREALIST

72

It isn't yet clear what impact the compact disc is going to have on the album as art an form. So far the tendency has been for bands to carry on thinking of albums in terms of two sides of black vinyl and to put some extra tracks on the C.D. version. (You can fit up to about seventy five minutes of music onto a C.D. so only putting on forty minutes' worth doesn't seem like very good value). Presumably as L.P.s are replaced completely, as they inevitably will be, by C.D.s, the perception of the album will be changed. An album will consist of over an hour of music which isn't divided into two halves, (unless you want to break it up by putting an intermission in the middle of course). This is bad news for Stock, Aitken and Waterman (they'll have a terrible time filling up a C.D. with seventy minutes of Jason Donavon), and good news for everybody else (we don't have to buy it, we can get one full of seventy five minutes of good music instead).

14. Getting your record pressed

As mentioned earlier, if you can get someone else to press your records for you it will save you a lot of effort and money, but the chances are that you will end up having to do it yourself. In fact persuading someone to put your record out can take as much effort as doing it yourself and will inevitably be more depressing; so it may be best to think in terms of getting the records pressed yourself from the start. The obvious snag is the fact that its quite expensive; it costs at least £1,200 to press a thousand L.P.s and about £2,000 to press a thousand compact discs. If however, you can raise the money in the first place it isn't too difficult (eventually) to sell enough copies to get your money back, and also you get the benefit of the total artistic control that famous bands always used to complain about not getting from their record companies. So, assuming that you've found your twelve hundred quid, this is how to get a record pressed...

There are various separate processes involved in making an L.P. and these are mostly all performed by different firms in different places. You can deal with all the firms individually if you like but it is simpler to go to an agency which specialises in organising the whole thing for you. The agency will take a cut of your money but won't necessarily charge you any more than you would have paid to the firms themselves because they negotiate with them to get cheaper prices than you would be offered. Isn't free enterprise capitalism wonderful?... if you're a company director.

So, the first thing to do may be to get hold of some sort of trade catalogue such as the Music Week Directory, look up record pressing agencies and ring them up to find out which is the cheapest.

Let's have a look at all the different bits of the process anyway though.

1) Cutting the record. This happens in a cutting room and is the place where your tapes are changed into grooves on a disc for the first time. You can either find a cutting studio yourself in the aforementioned trade publication or, better still, by word of mouth – you're bound to know someone who knows about this kind of thing, possibly the recording engineer you've been working with or someone else you know who's in a band – or the agency you've decided to use will probably suggest that you use their favourite one.

You don't need to go to the cut, but it's probably best because there are decisions to be made about the sound of the recording at this stage and if you don't go along to make them the cutting engineer will make them for you. Anyway... you make an appointment to cut your record, possibly via your agency, and then you go along to the cutting room with your master tapes – (which are recorded on quarter inch half track tape remember). The cutting engineer will take your master tape and put it onto a phenomenally expensive tape recorder which when you first came into the room you mistook for a bit out of a nuclear submarine. He will ask you if the tape has got any tones on it and you will say "I don't think so, what are tones?" This won't worry him though, he will proceed to play your master tape over the most expensive hi fi equipment in the world. This will make your music sound better than ever before while

4. WALDEMAR VON ICK

KETTLEDRUMS & EXPRESSIONIST

simultaneously making the gear you recorded it on sound like a pile of tin cans being dropped out of the back of a landrover with engine trouble. The tape recorder in the cutting room is linked up to a lathe which looks like a big record deck with extra bits. It physically cuts grooves into a laquer which looks like a giant smooth L.P. The laquer is the finished product from this part of the process. On its way from the tape recorder to the lathe various things can happen which alter the sound of the music. Firstly the engineer has to decide how much volume level he can get onto the record. This is partly governed by the length of the music because the higher the volume on the tape the more the grooves move from side to side and consequently the more room they take up on the laquer. So if your L.P. is thirty minutes a side the finished record will be much quieter than if it was twenty minutes a side. This is generally to be avoided because the sound of the stylus scraping through the grooves, like tape hiss, stays at the same volume whatever happens. Level is also affected by such things as the amount of stereo separation and the density of the music (if your L.P. consists entirely of talking, if it was a play rather than music for instance, you would be able to fit a lot more of it onto each L.P. side). The level of the music cut into the laquer can also be varied from track to track, or during a track if you like, which is handy if some of the tracks on your record are re-corded at different volumes and you don't want them to be; and you can fade a track down at the end if you want to tidy up some tape hiss or cut of the bit where the bass player put in an extra note because he wanted to be the last one to finish. Secondly the tone of the music can be altered at this stage; you can make the bass louder, or even boost the volume of some particular middle frequency to make the singing louder or suppress the oboe player etc.

While you're in the cutting room don't forget to have a chat with the engineer. As every cutting studio costs more or less the same to hire you will probably find that you are in the same studio where your favourite seventies album was cut; the engineer will tell you some interesting anecdotes about how the lead singer came to the cut stoned out of his mind on Evostick and ate the lathe.

Finally, you get to write cryptic messages inside the freshly cut grooves on the laquer. Think up something devestatingly witty before you go to the cut, otherwise you will end up writing something which isn't.

2) When you come out of the cutting studio with your two laquers (one for each side), all you have to do is hand them over to the pressing plant and go home and wait. The pressing plant will tell you (or your agency) that the records will be ready "at the end of next week". It's important to remember NOT to fall to the ground and roll about con-vulsed by laughter at this point be-cause you can seriously rupture inter-nal organs by doing this. Pressings always take six weeks, except in December when they take until Feb-ruary.

This is what happens in pressing plants:

a) For the first five weeks they press other peoples' records. (Ones on big record labels who want about a hundred million records pressing every week). Don't bother ringing up the pressing plant to ask them when your records will be ready during this period; they will tell you that a pack of wild dogs has got loose in the factory and they can't press your record till they've coaxed them all out of the machinery.

b) After about five weeks they start working on your record. They put your laquer in a tank full of concentrated nitric acid with alu-minium dissolved in it. They put an electric current through the alu-minium solution and this plates the laquer with the aluminium. When they take it out they have a negative of the laquer made of metal; it has ridges instead of grooves. Then they use it to mould a metal positive which has grooves like the laquer. They keep these metal plates for any future pressings you may want, so if you sell your first thousand L.P.s and want another thousand you don't have to pay for the cut or having the metalwork made.

c) Next they make stampers out of the metal positives. These are the things which they actually press the finished records with. By this time the labels have to be printed and delivered to the pressing plant. The stampers are fixed to a machine

5. BATHSHEBA HAIRGRUB

TRIANGLE & ETCH-A-SKETCH
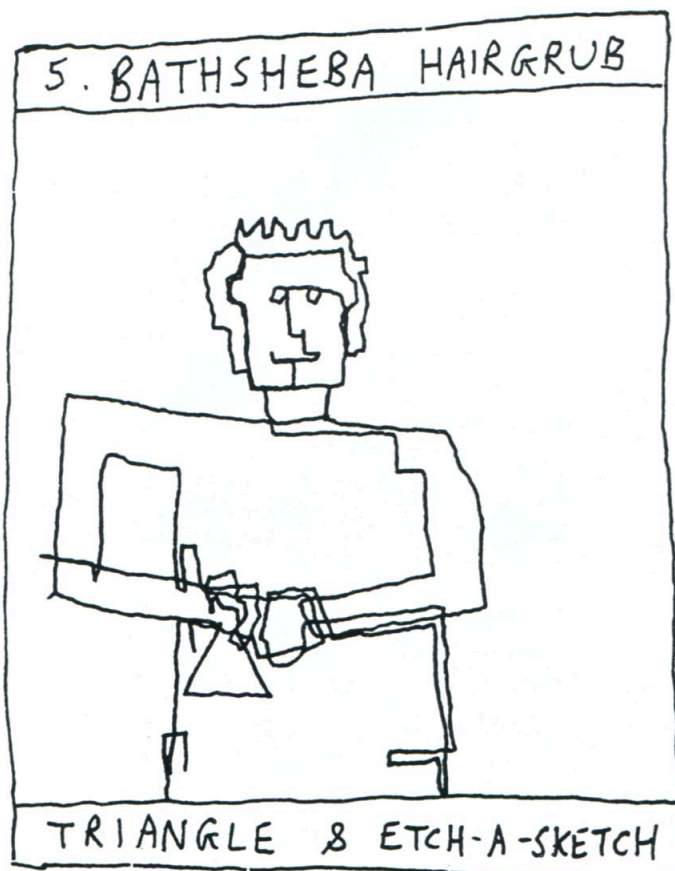
which squashes a round blob of vinyl with two labels on either side of it into a disk shape. After this happens you have a finished L.P.

d) Then they put them in sleeves for you. The inner, white paper sleeves are included in the price of the pressing, and they also put them in the outer sleeves which you should have had printed by this time too. Finally they pack them into boxes of twenty five and wait for you to come and get them.

3) The sleeves and labels are printed in different places usually. The art work can consist of almost anything, but it's best to produce something that looks like what you want the finished product to look like as opposed to leaving the type setting, for instance, up to the printer because they will produce the most boring design they can think of. Scribbling the sleeve notes with a biro is preferable. The art work can be any size you like. Making it twice as big as the finished product is a good idea because this will make all the thumb prints and other mistakes look twice as small. Also bear in mind that labels are round and sleeves are square. You can save a lot of money by only using one colour; full colour sleeves are an extra five hun-

dred quid. And don't forget that the records can't be pressed until the pressing plant have the labels, so finish your designs before you cut the laquer.

Compact discs and cassettes are totally different of course, although in both cases you have to start with a process similar to the cut. Cassettes aren't produced from disc laquers (that would be silly wouldn't it?). Instead, the tape equivalent of the cutting process ends up with another bit of tape - a fatter, continuous piece in a steel drum. This is sent to a place where they play it at high speed while recording lots of copies of it onto cassettes which are also going at high speed. Why so many people buy pre-recorded cassettes is a mystery; you can get much higher sound quality on cassette by taping your friends records on a reasonable hi-fi. This probably won't concern you anyway because in the "independent sector" (this is what you're in if you're pressing your own records) vinyl records are the dominant medium (until compact discs take over) and cassettes don't sell very well at all. This is because small independent record companies can often only afford to manufacture one format

and cassette-only releases have a credibility problem in that it's possible to release a tape even if you've just run off five copies of it at home - while spending twelve hundred quid on your own record implies a certain amount of artistic commitment which may otherwise be absent.

In Britain in 1990 the compact disc is still the second choice of format for independent record labels, mainly because L.P.s still sell better in the independent sector although the situation will probably change during the next couple of years. The best thing about compact discs is that they are able to cope with the uneven recordings produced by home studios. To get a cheap recording onto an L.P. all the unpleasant edges either get removed in the cutting room or sound just a bit more unpleasant than you wanted them to on the finished record. A compact disc will reproduce exactly what you recorded.

The end product of compact disc "cut" is a big digital cassette with time codes on it. You make all the same decisions about changing the way the music sounds as you do when you are cutting an L.P. only instead of going to the lathe, the signal is recorded digitally on a U-matic video tape which is later encoded with additional information about the length of the tracks and where they begin and end. This information can be read off the finished disc by your compact disc player. After you've done all this the U-matic tape goes to a compact disc factory where they make the equivalent of metalwork (which is called a "glass master") by removing the digital tape from the cassette and cooking it in an oven at extraordinarily high temperatures. Then the individual compact discs are made by cutting out circles of cardboard with big scissors and gluing shiny Bacofoil to them with Pritt.

15. Copyright and Publishing
Copyrighting something is the act of proving that you thought of it first; e.g. writing "I did this in 1990" on your record sleeve. Or if you haven't

6. BIFF VERCINGETORIX

BASS GUITAR & PRIMITIVE

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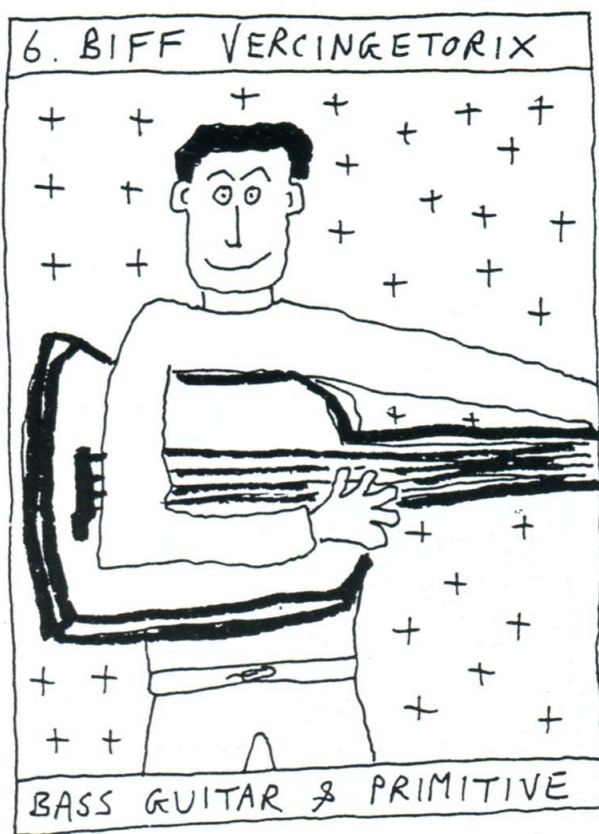
made a record yet you can seal a copy of whatever it is in an envelope, post it to yourself, make sure the post mark is legible, and then leave it sealed. Or you could write out the lyrics on the wall of Buckingham Palace, previously having alerted the press so that your arrest would be televised.

If you are worried about how to protect your songs and recordings from being stolen and think you ought to copyright them, consider this:- Who would want to steal your pathetic little songs anyway? Nobody. And even if they did you wouldn't bother taking them to court because it would be too expensive, complicated and frustrating. Also you would probably lose. Bruce Springsteen, having sneaked into your rehearsal room with a cassette recorder under his coat, disguised as a traffic warden, and then having used all your songs on his new album, will make so much money out of your genius that he will be able to hire Perry Mason to defend him in your ensuing law suit. So don't worry about copyright. The people who print your labels usually add a standard copyright message around the edge (you can ask them to if you want to make sure), so if you've made a record it gets to be as copyrighted as it will ever be automatically.

Song publishing is more important because you might be able to make a lot of money out of it; it's the main source of income for professional song writers. Whenever a radio station plays a song on the radio in Britain it has to pay a certain amount of money to an organisation called the Performing Right Society. The PRS is a society of music publishers, composers and authors which exists to collect revenue from song writing and distribute it to its members; (they also take ten percent off the top). This means that if you have a song played on the radio you will get some money for it providing that you or your publisher are a member of the PRS.

It's best not to sign up to a music publisher if you can avoid it because all they do is get your money from the PRS, take a third of it, and give

you the rest. (Also it has been known for publishers to collect your money from the PRS and then keep all of it without telling you). It is just as easy to collect your money from the PRS yourself. You do this by becoming a member; get their number from directory enquiries (they're in central London), ring them up and ask them to send you some details about how to join. You can either become a writer member or a publisher member, but you will only need to be a publisher member if you are planning to release records by other people and publishing their songs. They charge a fee to join, about £30 for a writer and £130 for a publisher, and you have to prove that you own the rights to a certain number of songs which have been publicly performed, by sending them a copy of a record or a poster for a gig. As a rough guide to the huge amounts of money to be made from song writing: if you have a three minute pop song played on Radio One you get about £50; (on network ITV you'd get hundreds but on most local radio you only get a few pence - it's based on viewing/listening figures and the length of the song). This is why, in a successful band, the one who writes the songs earns more than all the

others put together.

Another useful thing about being a member of the PRS is that they give out a "non performance allocation" every year. This is money which they have collected for things not directly related to particular songs - music licenses from pubs etc. and they share this out among all their members who have had at least one radio play during the previous year. The minimum amount for a writer-member is about £30, so even if you can only manage one local radio play you can still get back your membership fee.

Once you've released your song on a record anyone else is free to record it too. The only restriction on this is if you can prove that they are "bringing the copyright into disrepute", eg: if they change the lyrics to include libellous statements about Roy Castle or add the word "blanc-mange" before every noun in the song. Usually it's good news if someone covers one of your songs though because you still get all the publishing money. Also you would be entitled to another sum of money known as a "mechanical royalty" which is the writer's share of the record sales. To get this you have to be a member of the organisation which collects it, the Mechanical Copyright Protec-

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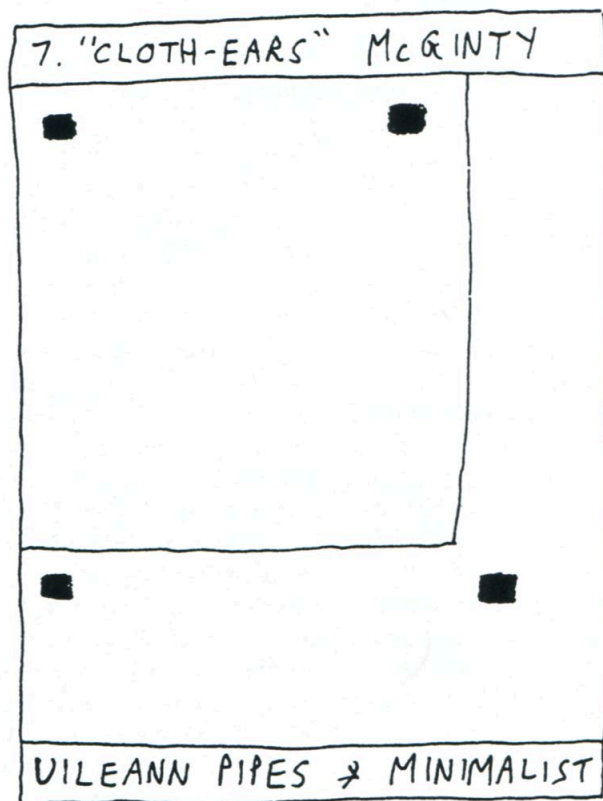
tion Society. You don't need to join the MCPS if your songs are only appearing on records on your own label because the MCPS won't bother asking you to pay mechanical royalties to yourself, but if Phil Collins puts one of your songs on his new album you will be entitled to a certain sum of money calculated by a complicated formula which only the MCPS understand. Suffice to say it can mount up to quite a lot if his album sells hundreds of thousands of copies.

So, although in certain circumstances it may be a good idea to sign to a publishing company - if they give you large sums of money and free studio time and make strenuous efforts to get your band signed to a big record label for instance, it's usually best to join the PRS and do it yourself.

16. How to sell records

The best way to sell records is directly to the people who want to buy them, either by mail or at gigs. This has the following advantages: You can charge less money for them and make more at the same time, you don't have to give any of it to unspeakable capitalist bastards who run distributors and shops, and you don't have to wait for the money to turn up about three months later. The disadvantage is that you won't be able to sell very many like this, so you'll probably end up having to deal with unspeakable capitalist bastards as well.

In theory signing a distribution deal can save you a lot of work. There are several independent distributors in Britain, the largest one being an organisation called "the Cartel" which is formed out of various different regional distributors. It isn't very difficult to persuade one of the members of the Cartel to distribute your record as this involves almost no financial investment on their part. The worst thing that can happen from their point of view is that your records will waste some of their warehouse space for a while. Distributors notify lots of shops and export companies that your record exists, and if any of them order it they

send it to them, usually by Securicor within a couple of days. The shops pay for the records about a month later. The distributor sends you a statement telling you how many copies your record sold in a particular month a month or two later, and a month or two after that they send you some money. Most distributors take about thirty percent of the "dealer price" (the dealer price is what they charge the shop for your record), and the shop marks your record up by whatever it feels like. So, the shop pays the distributor about £4 for an L.P. which it sells for about £6.50, and you get about £2.80 for it. You could try selling it to the distributor for less, and the distributor will still take thirty percent, but the shop will probably still sell it for £6.50. The dealer price for a CD is usually about £7, for a 12" single it's £2.15 and for a (soon to be obsolete) 7" single it's £1.15 (you can work out the rest yourself).

The other thing you could do is try to sell your records to shops directly. This might work in the case of some really big places which sell millions of records or who specialise in obscure independent labels, but mostly you'll find it isn't very cost effective. You may have more luck selling records to export companies; there's a large market for independent records in West Germany for instance. Get their names out of the Music Week directory and ring them up.

All in all, unless you find that you can sell hundreds of albums every time you play a gig, or think of a brilliant way of advertising your mail order company, you'll probably be best off with a national distributor. However, distributors won't usually promote your records for you. You will have to do a bit of promotion, otherwise no-one will ever find out that your record exists. This is slightly less demeaning and futile than trying to get signed up to a big record company, and may bring you into contact with slightly less horrible people - (except for Radio One producers who are a bunch of nauseating, flatulent egomaniacs).

Promoting a record involves giving away lots of copies of it free to

people who don't want them. People who are paid by music papers to review records, however, have to review something so there's a slight chance that they may pick your record. There are only four places to which it is worth sending your record: the New Musical Express, Sounds, the Melody Maker and John Peel. (Possibly also Andy Kershaw if you live in Zimbabwe). The three main music papers will sell your record, along with a pile of others, at the nearest second hand shop within half an hour of receiving it, but there's a slight chance that they might give it a review; and John Peel will probably play the latest Fall album for the hundredth time instead of yours, but there's a chance he might play it and you'll get your £50 from the Performing Right Society. It probably isn't worth sending out any "promos" apart from these four unless you happen to know someone who writes for a magazine in Austria who thinks your band is jolly good indeed, or someone who does a show on Radio Hinckley who likes your band so much that he will do a four hour radio special about you every time you make a record. The longer your band exists the more people like this you will come across.

The only other thing you can do is organise an elaborate publicity stunt. Assassinate Margaret Thatcher perhaps; this should result in some publicity if you handle it carefully enough - send out a press release about it timed to arrive the day after - but make sure you don't miss or you'll look silly.

What all this amounts to is that there is no foolproof way of making people buy your records unless you have several million pounds to spend on tiresome things like buying up lots of copies of it in chart return shops. There are many little tricks of this nature regularly played by large record companies but which are outside the ability of small ones. In an ideal world Radio One wouldn't play the records anyway and the tricks wouldn't work.

Don't let this put you off making music though.

(Part 1 of this article appeared in Vol.3 no.2).

Notes from Thug's Casebook
Fred Borage

ON ONE OF THOSE DAYS OF THE week one year somewhere or other it all started. What happened was completely unexpected and only someone making a completely random guess could know, but detective work does not rely on guesswork.

Inspector Stalin heaved his desk out of the 15th floor window of New Scotland Yard and said with a gallic shrug, "I suppose reality thinks it can come up with a crime that I cannot solve, eh *mon vieux* Thug? Order me two tickets on the 6am to Bodmin."

It was one of those foggy days such as used to lay around London like the gloved hand of a murderer in those days before the smokeless fuel legislation of the 1950s, and it wasn't possible to see what had become of Stalin's desk because the sound of its fall was completely muffled and swallowed by the fog, the texture of which was similar to Sainsbury's Lentil Soup.

By the time the train arrived in Bodmin dawn was breaking and the sky was spattered with briliant vermilions, greens and scarlets. The violent Clay hills and tin windings and the heaving peristaltic action of the train seemed to echo the reason for our journey: *Murder!*

LORD GRIMETHORPE'S MURDER had been particularly vicious and vile and sickening and nauseating and disgusting. Apart from that it was motiveless, without clues, improbable and employed a completely unfathomable method: the only sort of murder that interested Stalin, who couldn't be bothered with murders that did not involve an intellectual puzzle. Stupid murderers always got away with it when Stalin was on a case.

Stalin glanced out of the trap which purveyed us to Grimethorpe Towers, home of the Grimethorpe family, and said, "Do you notice something odd about the trap, Thug?" Apart from the blood splashes, I was quite at a loss as to what he might have meant, so I made a wild guess: "Lord Grimethorpe was known as a tight bastard and this carriage is too flash for him."

"Very good, Thug, but I was thinking of the mud on the driver's boots; mud like that is only found in North Wales, so I think we will find a Malay seaman staying in the Grimethorpe Arms, should we stay there this night rather than solving the crime."

"How on earth did you come up with that amazing deduction, Sir?" I replied, amazed as usual by Stalin's ability to add 2 and 2 and come up with an unusual answer.

"Well, that's not difficult to deduce, Thug. You observe, I am sure, the dishevelled appearance of our man, and the small cut under his left chin, and the fact that he reeks of alcohol? Well he's obviously come directly from the Grimethorpe Arms, where he spent the night drinking, inadvertently donning the wrong pair of boots in the process. Notice that he has them on the wrong feet." Stalin's powers of observation were incredible, as evinced by his various detective manuals, such as "The History of Every Single Shoe that has Ever Been Made Since 1500", &c. So, clearly he was going to continue talking unless I could think of some way of stopping him.

"Life would be a total bore if people didn't murder each other, Sir," I asserted.

"The weather in the Bristol Channel was abnormally clear yesterday," continued Stalin. "Did you happen to read the article in last month's 'Proceedings of the Astronomical Society' about abnormal sunspot activity as seen by the Reykjavik Observatory last year?" At this point I couldn't help noticing that the driver started to shift nervously on his seat.

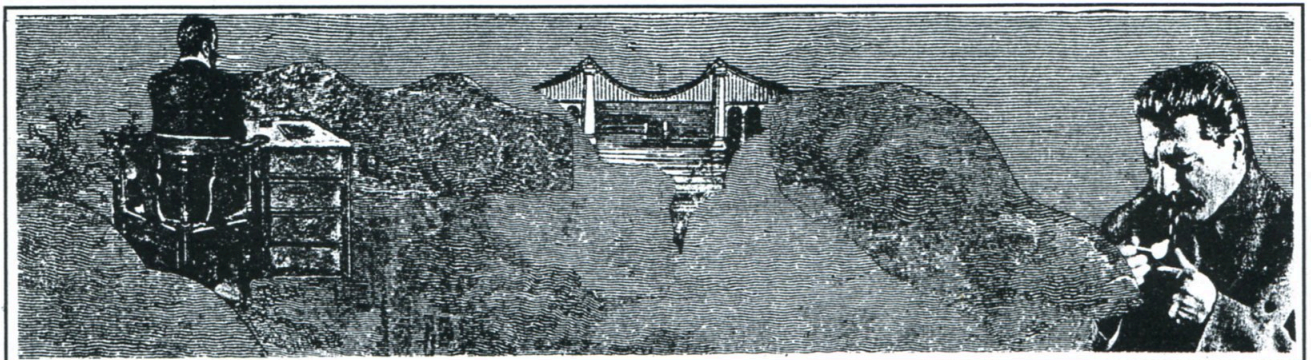"Good harvest last year, my good man," Stalin remarked to him, casually.

"No, master, 't were a total disaster; all the crops failed," the driver replied. At this point I was gripped with the anxiety that usually afflicts me when Stalin solved a crime without investigating the evidence or interviewing any of the suspects. I was afraid he would say, "Let's go back to London, Thug, there's nothing more to be done here", but instead he pushed the driver forcefully from the trap and leapt forward to grasp the reins: "I don't think professors of physics usually work as footmen for Lord Grimethorpe," he said, "I think we should go back."

"What happened, did Grimethorpe seduce your sister, eh?" said Stalin. "You thought you would pick us up in the trap and find out what we knew? Well, now you know that I know that you killed Lord Grimethorpe, using your knowledge of pressurised gas liquifaction techniques to help you. I am afraid your accent gave you away. We're going to give you a chance, which is more than you gave Lord Grimethorpe: we're going to throw you off the Bodmin suspension bridge, you will then have a calculable chance of survival when you hit the river Bod at the bottom. So, we'll say no more about it."

"I comes from Boscastle," groaned the footman.

"THERE ARE NO REALLY GOOD murders anymore, Thug," Stalin said on the way home. "I almost feel tempted to commit a few myself to give myself a challenge."

"Yes, Sir, life is really boring," I added, as the gloomy outlines of London came into view.

Graphics
and
Indeterminacy

Roger Sutherland

While composers in Europe, such as Boulez and Stockhausen, were exploring the ramifications of total serialism, experimental composers in New York were moving in exactly the opposite direction: from predetermined structures towards indeterminacy. Some commentators have argued that the gulf between the two schools is more apparent than real. According to Pousseur (1) the outcome of serial procedures is to guarantee a permanent renewal and an absolute degree of unpredictability, while Ligeti (2) has similarly argued that serial and chance procedures similarly produce aleatory textures in which little or no structural logic can be discerned. A criticism frequently made of serial writing has centred upon the contradiction between its strict mathematical basis and the outward impression of randomness or arbitrariness which it creates. Reginald Smith Brindle has observed:

"Although Henri Pousseur's "Quintet" is written in 2/4 metre throughout, the phrase articulations are completely fugitive, giving an impression of random rhythmic shapes rather then mathematically precise configurations. This enigmatic, almost "undefined", quality of such highly predetermined compositions is characteristic of much music in the style of total serialism" (3).

Whatever the truth of these assertions, the European serialists and the American experimentalists proceeded from diametrically opposed ideological positions. Boulez's uncompromising pursuit of total serialism was intended to obliterate

all traces of the tonal past, while the New York experimentalists (Cage, Feldman, Brown, Wolff) used chance procedures, and later indeterminacy, in order to obliterate compositional intention. Their aim, to quote Cage, was to "let sounds be themselves rather than vehicles for man-made theories or expressions of human sentiments" (4). There is a certain irony in the fact that both schools drew their inspiration from the music of Webern. For serialism and indeterminacy were founded upon entirely different interpretations of Webern's importance. The Europeans were attracted to the conceptual and rationalistic aspects of his music: they saw in his refinement and expansion of serial technique the possibility of a totally organised music. For the Americans this amounted to a sterile matching of numbers with sounds in the hope of attaining total unity. Wolff was highly critical of this approach, arguing that total serialism might give rise to an irrelevant complexity. He wrote:

"There is rather an inevitable natural complexity in things (i.e. the structure of a tree) and it cannot finally be precisely indicated, controlled or isolated. To insist on determining it totally is to create a dead object" (5).

The Americans were less interested in how Webern's music was constructed than in how it sounded. They were impressed by his use of silence as an integral element in the musical fabric. Webern had used silence, not merely as a gap in the continuity or a pause to lend emphasis to sounds, but as an element of

composition in itself (comparable to the way in which contemporary sculptors had used empty space or "negative volume"). They were impressed by the emphasis which Webern gave to the unique qualities of each individual sound. These aspects of Webern's music led Cage to reach far more radical conclusions than those of the European serialists. Cage reasoned that since sound and silence are of equal value in Webern's music, duration should be given much greater structural importance (since duration is the one factor which sound and silence have in common). A musical structure based primarily upon units of time allowed for an equivalence between pitched sounds and unpitched noises, a possibility not permitted by serialism insofar as it operated within the confines of the tempered chromatic scale. Furthermore, unpitched noise could include both notated sounds as well as unintended or ambient sounds emanating from the performance environment. As Cage wrote:

"In indeterminate music those elements which are not notated appear in the written music as silences, opening the doors of the music to the sounds that happen to be in the environment. This openness exists in the fields of modern sculpture and architecture. The glass houses of Mies Van der Rohe reflect their environment, presenting to the eye images of clouds, trees or grass according to the situation... There is no such thing as an empty space or an empty time" (6).

Despite their common interest in

Webern, the New York experimentalists were not an ideologically unified school. They shared, according to Christian Wolff, not a set of ideas but "a desire to do something different, so as to be clear of styles" (7). According to Feldman, such a group gives "a sense of permission, a feeling that you don't have to fight against an accepted standard because others are working outside it too" (8). Generally the paths taken by these composers diverged but overlapped at crucial points. Feldman was the first to write partially indeterminate music. At the same time as Cage was writing "Music of Changes" (1952) in which chance operations were applied to composition only, Feldman was writing pieces which allowed for indeterminacies in regard to pitch. His "Projection I" (1951) for solo cello divided the range of the instrument into high, middle and low, allowing various choices of pitch within the ranges indicated. In these early scores, which were written on graph paper, the pitch ranges are indicated in boxes, as shown in Fig. I:
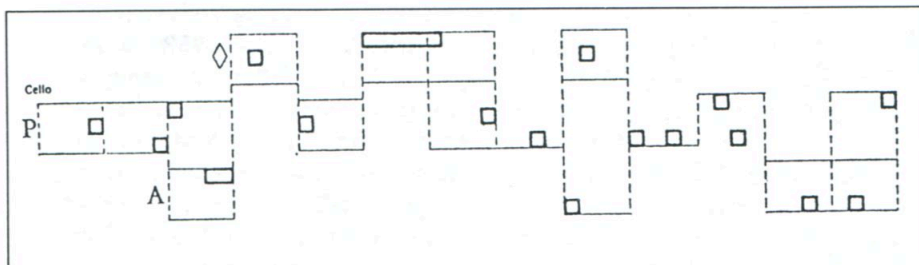
Fig. I

By requiring the player to make a separate decision for each box, Feldman aims at dissolving melodic continuity, at removing the logical connection between one sound and the next. The pitch logic of serialism is thus ruled out, each note being heard as an isolated, disembodied timbre. This means that pitch has become a secondary characteristic of timbre, an idea already suggested by Schoenberg when he observed that pitch is simply "tone colour measured in one direction only" (9). In traditional composition the piano sketch would specify pitch relationships, leaving instrumental colours to be filled in later (rather like a sketch for a painting). Here pitches define the musical structure (melody and harmony) while timbre functions as a decorative or expressive element (one could alter the orchestration of a Beethoven symphony without destroying its identity). Feldman's music operates in reverse fashion, specifying timbres and leaving pitches to be filled in during performance.

It is important to emphasise that Feldman used chance, not in order to relinquish compositional control as such, but in order to dissolve harmonic and melodic continuity, concentrating the listener's attention upon other aspects of musical sound, such as timbral changes, different types of attack and decay, subtle dynamic alterations. As Wolff has remarked:

"I think Feldman's interest in indeterminacy has to do with his interest in painting. He used to put sheets of graph paper on the wall and work on them like paintings. Slowly his notations would accumulate and from time to time he'd stand back and look at the overall design. For him it had less to do with a belief in chance - it was more functional than anything else. He would talk about different "weights" of sound and that was simply the easiest way to express them. Pitches didn't really matter as there were so many other controls and he used chance without its interfering with expression" (10).

Feldman regards this technique of partial control as the musical equivalent of Abstract Expressionism in painting. An admirer of the paintings of Mark Rothko, he has described his works as "time canvases" which he "primes with the overall hue of music" (11). This description suggests a comparison with American "colour-field" painting, of the type pioneered by Rothko, in which large expanses of intense colour shimmer and bleed into each other. Rothko's work eschews drawing in favour of an improvisatory method which allows colour to determine form. His paintings contain a minimum of incident, textural or otherwise (in contrast to the more gestural works of Pollock and De Kooning) yet exude what Anton Ehreznweig has called a quality of "full emptiness" (12). Feldman's "time canvases" are similarly uneventful yet create a very intense atmosphere. Long silences are used to accentuate the individual qualities of sounds. Often, single pitches are repeated over and over so that the listener's attention is focussed upon colouristic changes or subtle overlappings of different instrumental timbres (there is a comparison here with the way in which Rothko's colour areas "bleed" at the edges). The music seems to be aimed at creating a sense of timelessness rather than a sense of drama, progression or climax. "Chorus and Instruments II" (1958) exemplifies Feldman's use of harmonic stasis to emphasise individual sound qualities. Here a slow spaced-out succession of single chords is sung very quietly, without vibrato, by a mixed chorus. Each chord is echoed very gently by a combination of brass instruments and chimes. Because the instruments are played with a minimum of attack they sound like the dying resonances of the sung chords. The slow, massed singing of the chords at such a quiet level gives the place a hushed, prayer-like intensity and a feeling of immense acoustic depth, despite the music's limited dynamic range. Here pitches are specified while durations are relatively free. The conductor chooses the duration of each sound on the basis of breath control and harmonic weight.

One feels, in listening to Feldman's music, that freedom in some areas is coupled with exceptionally rigorous control in others. The percussionist Max Nehaus has commented that Feldman's music, because it is so soft, has the effect of magnifying that area of dynamics between pianissimo and piano - we hear all sorts of nuances we never heard before (7). His solo percussion

piece "The King of Denmark" (1965) creates a timbral structure of extraordinary delicacy. It is played throughout with the fingers, rarely rising above pianissimo. The score specifies the relative pitch of each note, the relative duration (indicated by horizontal space on paper) while timbres are fully determined. The limited dynamic range has the effect of emphasising the attack and decay characteristics of each sound as well as subtle differences between sounds played by using the fingertips and fingernails. The piece has an ethereal, evanescent quality quite unlike that of any other work in the percussion repertoire. In the recorded version, played by Nehaus, the player's inadvertant breathing sounds appear as an integral part of the music, emphasising its quality of intense and intimate ritual. Although Feldman says that his aim "is not to compose but to project sounds in time, free of a compositional rhetoric", there is no denying the intensely expressive quality of his music.

Feldman's idea of projection implies that sounds, once initiated, assume an energy or momentum of their own, like the linear trajectories of a Pollock or Rothko's colour expanses. This emphasis upon the impersonal, autonomous character of sound derives from the influence of Abstract Expressionist painting, which for Feldman offered a solution to the impasse of twelve tone or serial writing. He has said:

"The new painting made me desirous of a sound world more direct, more immediate, more physical than anything which had existed before. Varese had elements of this. But he was too Varese. Webern had glimpses of it but he was too involved with the disciplines of the twelve tone system. The new structure required a concentration more demanding than if the technique was that of still photography, which for me is what precise notation has come to imply".

Feldman subsequently abandoned graphic notation in favour of a more deterministic method which nevertheless allows overlapping planes of sound to evolve in a fluid, unruffled manner. Cornelius Cardew has emphasised the stylistic continuity between the earlier and later works by suggesting that Feldman's later work "is himself playing his graph music" (8). In his "Piece for Four Pianos" (1957) he provides each player with the same part, made up of a succession of chords, but allows players to decide their own durations within a specified tempo, producing the impression of a series of reverberations from a single sound source. Subsequent works such as the "Durations" series (1960-1) and "For Franz Kline" (1962) employ more varied instrumental groupings and give each instrument a different part while leaving tempi to the discretion of players, so that the individual lines move towards conclusion at their own pace. Unlike most of his contemporaries, Feldman has displayed little or no interest in electronics or unconventional sound sources. "I have yet to hear", he has said, "an easy harmonic played beautifully and without vibrato with a slow bow on the cello. I have yet to hear a trombone player come in without too much attack, and hold it at the same level... That's why these instruments are not dead for me: because as yet they have not served my function" (9).

Like Feldman, Earle Brown (b. 1926) was not interested in relinquishing compositional control. For him the use of chance was a means of transcending personal taste and discovering new structures, but unlike Cage he did not pursue the use of chance in a dogmatic way. Indeed, he has sought to dissociate himself from Cage's single-minded pursuit of indeterminacy. He says:

"I feel that a really indeterminate situation is where the self can enter in too. I feel that you should be able to toss coins and then decide to use a beautiful F sharp - be willing to chuck the system in other words. John just won't do that" (10).

Brown's own experiments in indeterminacy were inspired largely by the visual arts. In the early '50s he was deeply impressed by the "action paintings" of the Abstract Expressionist painter Jackson Pollock, which were created by pouring and splashing paint onto unstretched canvas in an unpremeditated fashion. He was also impressed by the sculptural mobiles of Alexander Calder in which geometric shapes are seen in constantly changing spatial relationships. He wanted to combine the spontaneity and immediacy of action painting with the open-ended variable form of Calder's mobiles. He experimented with compositional methods that would be spontaneously and rapidly executed like action painting - avoiding precise control of details - and with mobile, open forms whose sequence of events would vary at each performance. The fluid, improvisatory quality of Pollock's work led him to abandon metrical notation in favour of a system of space-time notation in which horizontal space on the page equates with approximate time in performance. "Time", he observed, "is an infinitely divisible continuum... a musical event can start at any point along this continuum."*

Brown's indeterminate works fall into two categories. The earliest works, notated in graphical form, require the performer to make major decisions concerning both form and content. "December, 1952" (example 2) lends itself to a variety of interpretations. The rectangles can be interpreted as chords or tonal clusters while their thickness can be taken as indicating the number of constituent pitches. A degree of ambiguity is inherent in the fact that some are arranged vertically and

*Space-time notation is extremely flexible. It can be used not only with conventional pitches and staves (as in Brown's "String Quartet"), but also in purely graphic scores without any recognisable musical content. Normally, the composer provides an indication of the basic speed at which the score is to be read, either once at the beginning of the work (as with the traditional system of metronome markings) or by means of a continuous horizontal line on which every second or five seconds is marked, so that the performers can rehearse with a stopwatch if necessary. Although Brown is usually considered to have been the inventor of space-time notation, in fact 40 years earlier the Italian Futurist Luigi Russolo had devised a similar notational system for his noise instruments (intonarumori) in the few surviving bars of his "Risvoglio di una citta".
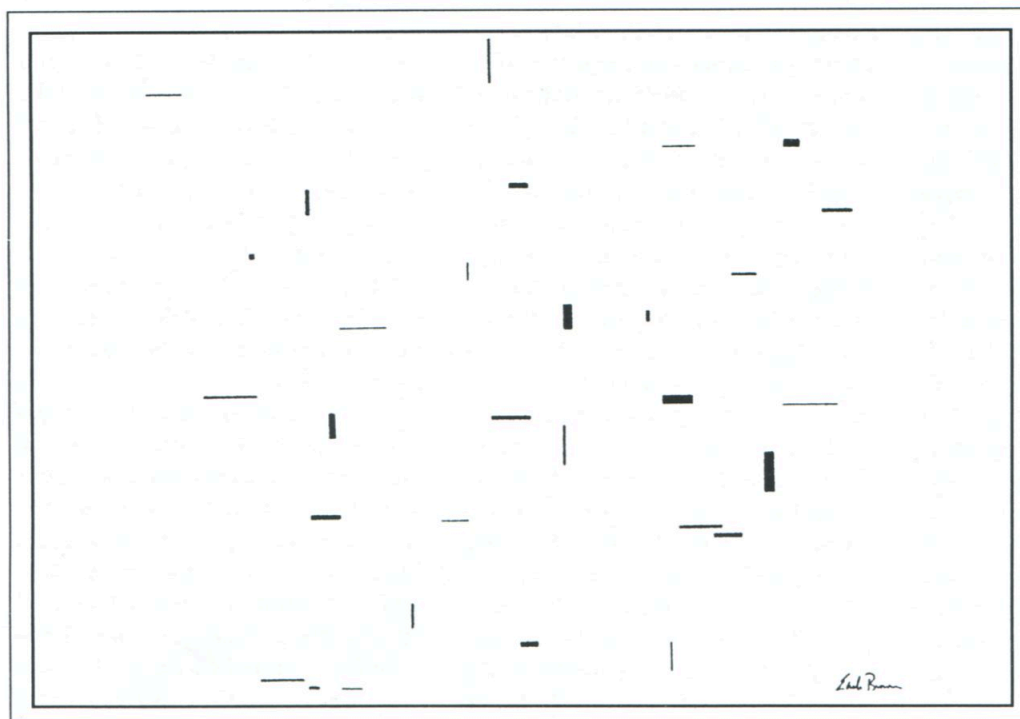
Fig. 2

some horizontally. A version made some years ago by John Tilbury interprets the horizontal rectangles as melody and the vertical rectangles as harmony. However, the score has many other implications. For example, the width of the rectangles can be taken as representing degrees of loudness and softness. If this correlation is made, given that the rectangles fall within a narrow spectrum of widths, does this mean that a correspondingly narrow range of dynamics should be used?

A score like "December, 1952" poses a whole range of problems to the performer and invites him to become a collaborator in the shaping of the work. The two recorded versions of the work indicate the variety of possible realisations. David Tudor's version is based upon a very literal interpretation of the score. Horizontal space on paper is taken as equivalent to time in performance. Tudor establishes precise correlations between sound and image, thus determining relative durations of sounds and silences. Similarly the relative thickness of lines is taken as indicating the densities of tonal clusters. Prima Vista's recorded version, on the other hand, is a much more spontaneous and impressionistic rendering of the score played by a varied

instrumental ensemble. The players generally avoid precise sound-shape correlations but do use the vertical rectangles to indicate sounds of definite pitch (flute, violin) and the horizontal shapes to indicate unpitched noises (cello, harpsichord).

Most of Brown's early pieces require the performer to make crucial decisions concerning both musical form and material. In later pieces the material is specified with varying degrees of precision while the overall form - the relationship of parts - is open-ended and variable, like the sections of a Calder mobile. Brown's aim in these pieces is to free musical form from a fixed linear chronology. The music is divided into "moments", distinct sections, each of which is characterised by a specific range of timbres, rhythms and textural qualities. In "Times Five" (1963) for ensemble and four-channel tape there are five basic sections. Within each section the conductor is free to juxtapose and combine the written instrumental materials in spontaneous relation to the tape, varying the textures, densities and tempi. The tape is an unchanging ground upon which the live material is superimposed - spontaneously and differently in each performance - yet maintaining the basic shape and character

which the composer has designed. The opening section is primarily a play of microtonal frequencies around F sharp with some harp and double bass configurations extended on the tape part by being played at twice their normal speed. The second section dispenses with fixed pitches and explores sounds of a gestural character, analogous to washes and smears of texture in Abstract Expressionist painting. The third section is made up of similar sounds, but of a more delicate character, while the fourth section is more conventionally musical, with clearly defined pitches and rhythms. However, the tape part (improvised by Brown himself on piano, celesta, harp and vibraphone) periodically overlaps with these passages to create areas of ambiguity. Most of the taped sounds are electronically modified versions of instrumental sounds, usually altered only slightly with regard to speed, timbre etc. During the more complex interactions between tape and ensemble Brown's intention is that the audience should be uncertain as to the origin of particular sounds. The tape, he says, "will always sound "instrumental" but rather "impossible" relative to the five instruments on stage" (12).

Brown's work embodies a dialec-

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tical interplay between choice and chance, between premeditation and improvisatory flexibility. The eighteen sections which comprise his "String Quartet" (1965) are written out with varying degrees of precision. In some pitches are notated exactly, in others they are indicated only in relative terms. Durations are relatively freer and are indicated by means of "space-time" notation. Brown specifies that tight ensemble cueing is to be avoided, especially in moving from one section to another. This is to loosen up the block structure of the work and to make it more mobile and fluid.

The final section of the work is the most indeterminate. It is written in a free graphic notation which Brown describes as "Pollock-inspired" (Fig. 3):
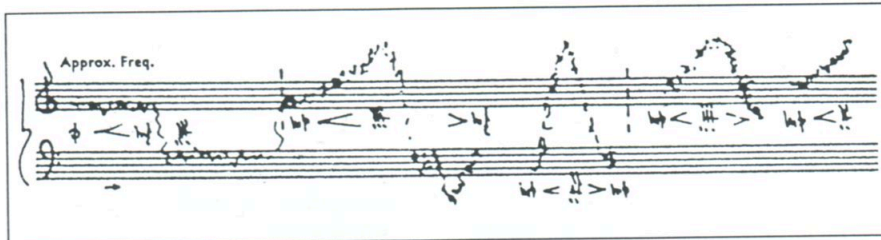
Fig. 3

This final section is a free coda to be assembled spontaneously by the quartet. There are between eight and ten events for each player, separated by vertical dotted lines. Each of the musicians may play any of his events at any time, in any order and at any speed. All of the materials are recapitulated from earlier in the piece but are brought into new and indeterminate relationships. Brown emphasises that any premeditated ordering of these elements would eliminate the quality of spontaneous dialogue between the players which for him is an essential aspect of music-making.

It was perhaps Christian Wolff (b. 1934) who pioneered the most radical approach to indeterminacy. Being musically self-taught (his background was literary rather than musical) he had no previously acquired musical culture to unlearn. At the same time as Cage was using chance operations to determine composition (as in "Music of Changes"), Wolff was exploring systems which allowed the chance element to emerge during performance. In 1951 Wolff composed a number of pieces in which symbols were written down the page in vertical columns while the player was required to read them across the page in normal fashion. This procedure served to destroy intentional continuity between sounds. He also wrote a number of vocal pieces in which exact pitches were dispensed with. Instead of conventional pitch notation there was simply a line meandering across the page and the pitch of the singing would move in the same general direction as the line (Cage used a similar technique in his "Aria" of 1958). During the same period Wolff wrote several pieces in which he tried to discover "how free you could be within very narrow limits". "Duo for Violins" (1950) uses only four pitches and the interest of the piece derives from their different combinations and overlappings. These pieces are analogous to contemporary abstract paintings in which a limited range of colours or geometric forms are arranged and combined in various permutations.

The idea of "freedom within limits" has governed most of Wolff's subsequent work. These limits, however, are not imposed by a compositional framework but by a structuring of the contingencies of the performance situation itself. Rather than composing sound relationships Wolff specifies musical actions which will have variable outcomes. Such actions are experimental in the sense defined by Cage: "a musical action is experimental when its outcome is unforseen" (10). This approach was Wolff's solution to a practical problem, which was that some players were inclined to work out their interpretation of a piece prior to performance. In order to counteract this tendency Wolff began notating instructions whose results were impossible to predict. In "For Pianist" (1959) Wolff instructs the player to go from a note near the bottom to a high note as quickly as possible. This can have one of three outcomes: either the pianist can go too high, or too low, or he can hit the note exactly. For each possibility Wolff prescribed a different continuation so that the player could not know in advance what he would find himself doing.

More complex contingency systems govern Wolff's ensemble pieces. Here Wolff does not compose in the accepted sense but sees his role as that of organising the circumstances which govern performer interaction. In his "Summer for String Quartet" (1961) the players constantly have different options of what to play: any one of three pitches, any pitch at a certain loudness, any loudness at a fixed timbre. For each possibility different responses are indicated. Each sound or group of sounds functions as a cue which determines the next player's response. Thus the structure of a performance will evolve on a moment-to-moment basis and will therefore be unique and unrepeatable. Despite its indeterminacy - or perhaps because of it - Wolff's pieces have an unmistakeable sound. He differentiates instrumental sound very acutely, requiring players to articulate different kinds of vibrato, attack and release, timbre-alteration and distortion. The listener accustomed to tempered scales or uniform timbres may miss these subtleties or dismiss them as incidental effects but they are the very substance of the music. The appreciation of Wolff's music requires a kind of peripheral vision, an unfocussed awareness which attends to minutiae of sound phenomena which ordinarily pass unnoticed. For the players his music is extremely demanding, requiring not only extreme agility of technique but finely tuned aural discrimination as well, for the cueing system which determines the music's progress demands the recognition, at each moment, of one among a whole range of acoustic possibilities. "For One, Two or Three People" (1967) specifies twenty-two different modes of sound production, ranging from "anything"

to "a sound involving friction" or "slight alteration of a sound". The prerequisites for playing Wolff's music are mental alertness and physical dexterity as well as an intimate knowledge of the possibilities of one's instrument. Michael Nyman has observed (11) that in performance the players seem to be in a state of perpetual crisis, while the music itself appears calm and unruffled, unlike that of the European Avant-garde, which often sounds as though it actually *is* the expression of crisis.

As Nyman suggests, the performance of Wolff's music is governed by perpetual uncertainty while the music itself unfolds in a manner which seems both leisurely and inexorable. Wolff has stated that his aim is not to create the controlled set of performance specifications which constitute the normal musical score but rather to create a piece which is so flexibly arranged that it resembles a landscape which can be communally explored from a variety of directions (12).

In the early 1970s Wolff wrote a number of pieces intended for performance by untrained musicians. The "Prose Collection" (1973) contains pieces which offer verbal instructions only. Wolff's intention here was to see how little he could specify and yet still create a piece which has a characteristic identity. In "Make Sounds with Stones" this identity derives principally from the nature of the materials used, which impose their own characteristic timbres and textures. The score reads, in part:

"Make sounds with stones, draw sounds out of stones, using a variety of sizes and kinds (and colours); for the most part striking stones with stones, but also stones on other surfaces... or other than struck (bowed, for instance, or amplified)".

Interestingly, the limited dynamic range of which stones are capable tends to guarantee a very restrained style of performance in which no individual player predominates. Even with a large ensemble playing stones in a variety of ways the impression is one of transparency and textural delicacy. This impression is sustained even in electronically amplified versions of the piece, such as that realised in 1985 by Morphogenesis. Here, due to the use of artificial reverberation, the piece sounds as though it is being played inside a cavernous interior. Consequently the players allow long pauses for the sounds to die away. Although silence is not indicated in the score it can be seen as a necessary requirement of a situation involving amplification. Other pieces in Wolff's "Prose Collection", also for unorthodox sound sources, similarly encourage sensitive interaction between players without actually specifying any rules.

Like abstract Expressionism in painting, indeterminacy started in New York but spread rapidly to become an international phenomenon. Given its philosophical roots in Zen Bhuddism and other oriental modes of thought it is appropriate that it should have taken root in Japan. Here its principle exponent has been Toshi Ichyanagi (b. 1933). Like Wolff's music that of Ichyangai is highly indeterminate yet engenders a very restrained, even reticent style of performance. In his string quartet "Nagaoka" he requires the instrumentalists to bow where they normally finger and finger where they normally bow. This, as Cage comments, "is miraculous, producing a music which does not make the air it is in any heavier than it already was" (13). Since the players are widely separated in space the effect of the piece is to spread a net of softness over the performance area, counteracting the harsher sounds emanating from the environment. Like Cage Ichyanagi has devised various means of freeing his music from the impediment of his own taste and imagination. In a work called "Distance" (1966) he requires the players to climb high above the audience to a net or scaffolding from which they can activate instruments which are placed below them on the floor. This physical separation forces the players into an unpredictable relationship with their instruments. The latter cannot be played directly but in an oblique manner which severs the relationship between cause and effect. A rather incongrous impression results from the disparity between what is seen and what is heard. The audience sees a very strenuous activity on the part of the players but hears a rather ethereal collection of sounds (very loud sounds are virtually impossible) punctuated by long periods of silence. The piece is a perfect visual embodiment of Cage's conception of art as "purposeless play". Like Cage, Ichyanagi aims at circumventing musical intention in order to allow sounds to be physically, uniquely themselves. He also aims to create structures which are open and "hospitable" (to use Cage's own expression) to sounds which happen to occur in the environment. He compares the structure of his pieces to that of traditional Japanese garden design. The elements of the garden may be carefully planned but they interpenetrate with elements from outside: the clouds, trees, movements of the stars. These aspects change continually, they are part of the garden, yet they are not controlled by the designer. Ichyanagi achieves a similar openess by incorporating into his music long periods of silence which act as windows through which environmental sounds can be heard.

The analogy with garden design can be taken a stage further. The elements of the garden are not seen in any fixed spatial or temporal arrangement. How one views them depends upon the angle of one's approach - different perspectives are possible. Ichyanagi creates this flexibility in some of his pieces by dividing the music into layers of sound which progress independently of each other. Thus in "Life Music" (1966) the sounds of a large orchestra are picked up by contact microphones and are ring modulated during the performance. There is no fixed order of parts so that in each performance a different sequence of events may occur. The ring modulators are operated according to a separate score which has its own strict time schedule. Thus which sounds will be heard in their natural form and which will be electronically altered is unpredictable, since the progress of the orchestra is independent of the modulating scheme. There is also a tape part

containing gestural sounds, rather explosive in character, created by friction on various amplified materials. The various combinations of live/processed and live/recorded sound create areas of ambiguity at random points. During these passages it is difficult to discern how sounds are being produced. In its combination of orchestra with live electronics "Life Music" resembles Stockhausen's "Mixtur", composed during the previous year, but its underlying conception is quite different. Whereas Stockhausen aims to create unity and integration within diversity, Ichyanagi is content to allow dissimilarities to coexist. His aim, in Cage's words, "is to achieve a multiplicity which is characteristic of nature rather than a concentration which is characteristic of human beings". Since Ichyanagi makes no attempt to integrate orchestral and electronic sounds, allowing them to coexist as opposites, "Life Music" can be seen as embodying a critique of orthodox post- serial works (like Stockhausen's "Kontakte" or Berio's "Differences") which contain smooth transitions between instruments and tape. The tape insertions in "Life Music" obey no integrative logic but appear gratuitously, like those textural ruptures which violate smooth colour washes in certain abstract paintings.

Despite the seemingly anarchic character of his music Ichyanagi's scores impose tremendous constraints upon players. His "Piano Piece No. 7", one of a series of pieces composed between 1959 and 1961, specifies "sustained sounds, no attacks", giving rise to an extremely subtle mode of performance which emphasises various types of resonance created (mostly) by means of friction directly upon the strings. "Sapporo" (1963) involves a complex system of coordination recalling Wolff's ensemble pieces. Here up to fifteen players may use any instruments which are capable of executing sharp attacks and slow glissandi. The interactive aspect of the piece is covered by a symbol which tells the player to listen to the sound produced by another while continuing his own sound, at other times to watch the sound making gestures of other players, or those of the conductor. At these observing moments the player may switch from the aspect of the notation he is working on to another which continues what he has just heard. If he cannot find one in the score he can exchange parts with another player. These strictures allow for a more improvisatory approach than Wolff's music while calling upon the player's circumspection, alertness and ability to adjust to a communal situation.

The work of Takehisa Kosugi (b.1934) parallels that of Ichyanagi in its ironic treatment of the relationship between player and instrument. His "Distance for Piano" (1966) relates in conception to Ichyanagi's piece of the same title. Dedicated to David Tudor, "Distance for Piano" compels the pianist into a problematic relationship with his instrument because various obstacles are placed between the two. The pianist positions himself at a specified distance from the piano and produces sounds, not directly, but by manipulating the obstructions. These obstructions act as impediments to his virtuosity in one sense, and in another as a challenge to it. However, the impression of the piece is more visual/theatrical than musical (insofar as this distinction continues to apply in such work) since Kosugi is less concerned with the sounds themselves than with intensifying the performer's (and audience's) awareness of the process of making sounds.

The most radical European exponent of indeterminacy was probably Sylvano Bussotti (b.1941). The seven instrumental pieces which Bussotti wrote in the latter part of 1959 were some of the earliest explorations into the field of musical graphics. Like Cardew's "Treatise", written seven years later, these pieces require no explanation, for the signs which they contain thrive on their enigmatic nature. Players are thrown back upon their own interpretative resources. While concrete traditional signs only invade "Treatise" in any significant number towards the end of the score, Bussotti's work exhibits this interplay between known and unknown sign throughout. The first piece, scored for flute and piano, consists mainly of conventional musical symbols with brief excursions into drawing at those points where the pianist plays directly upon the strings or frame of the piano or, with the flautist, extends the instrumental timbres towards the realm of unpitched noise. Perhaps the most extreme movement in the series, by virtue of its purely graphical character, is "Sensitivo" for violin (the seventh in the series). Yet here the delicately wandering lines, embedded in the remnants of a musical stave, evoke the tremulous quality of a string piece in a manner which provokes the player's inventiveness. Bussotti calls these seven drawings an "occult collection"; they are intended, he says, "to evoke immediate and spontaneous interpretation by its players". He goes on: "There is no precise explanation of markings. A given marking is self-explanatory, or is explained by virtue of its magic origin. The degree of parallelism that can be attained between signs and their acoustical realisation will create the occult attraction of every realisation process".

Bussotti's creative draughtmanship appears to be aimed not only at stimulating musical inventiveness, but also the flamboyant theatrical behaviour which he demands of performers. The following section from "Per Tre Sul Piano", the third piece in the 1959 series, is characteristic in this respect. In this work, for three performers at a single piano, "the instrument becomes a prone body, alternately caressed, cajoled and assaulted by its suitors", and the extravagance of the notation suggests an appropriately sensual manner of performance. Bussotti has said of this composition that he had originally planned to provide a detailed explanation of the various signs but that, during the decade which elapsed between composition and publication, the works in the series had already established their own aural tradition through a succession of performances. The ambiguities of the notation were therefore to be deciphered in the light of that tradition.

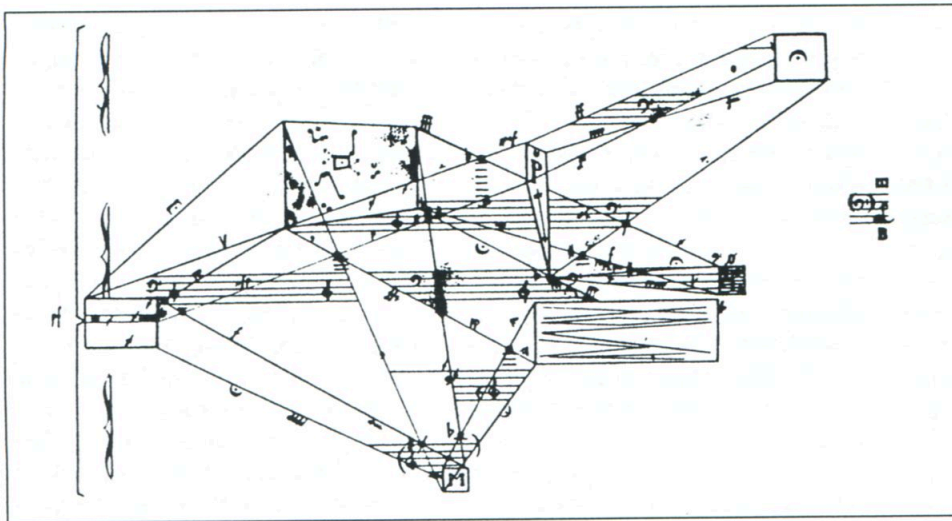Bussotti was one of the first composers to establish a dialectic be-

Fig.4

tween composition and performance, to regard the performer as collaborator rather than executant. Max Nehaus's 1964 rendition of "Cour Pour Batteur", the second piece from the '59 collection, shows the extent of this collaboration. The score itself (fig. 5) allows for multiple realisations since, as well as using ambiguous signs, Bussotti dissolves the spatial direction layout of the score by arranging the symbols at conflicting angles. Also, the page can be read in any one of the four rotational posi-

tions. For his version Max Nehaus had four enlargements made of the score, one for each of the four positions. He then divided each of these enlargements into systems by cutting them into strips and pasting them together in the sequence he wanted as the basis of a performance. At the same time Nehaus added an additional element of indeterminacy through the use of amplification. The latter has the effect of focussing our attention upon unintended sounds, since it sensitises the entire perform-

ance area. During certain sections of the piece Nehaus's body movements and unintentional voice sounds are highly amplified and become an integral part of the music. Also highly amplified is a set of cymbals and tam tams that are placed within the performance area. These are not struck directly but resonate sympathetically with the other instruments, extending the tones and adding new timbres. Realisations such as those by Nehaus have assumed a definitive character, strongly influencing sub-
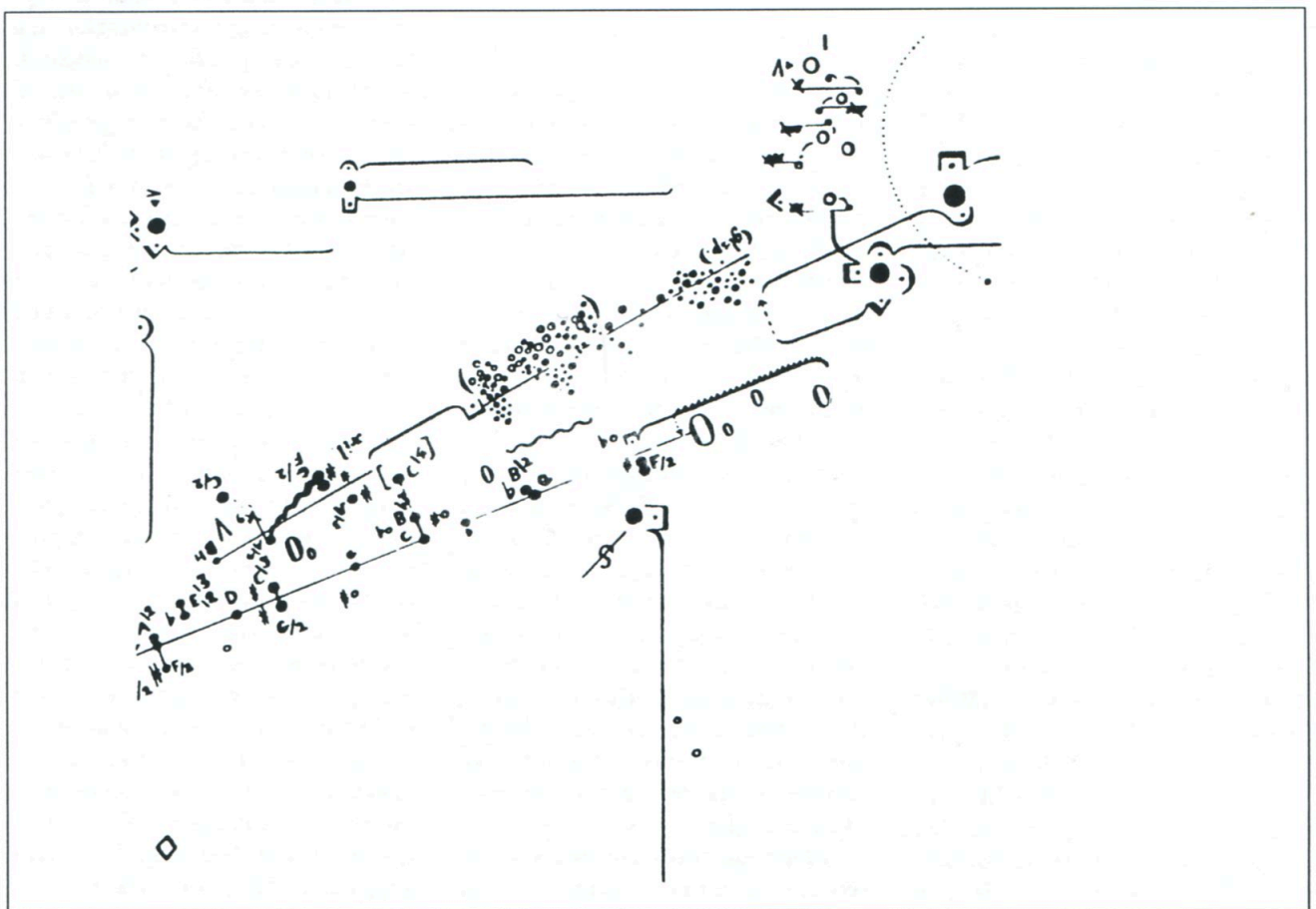
Fig. 5   *Coeur pour Batteur* from *Sette Foglie.*

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sequent interpretations of Bussotti's scores.

Nehaus is one of a number of performers, along with David Tudor, whose collaborations with indeterminate composers during the 1960s took on an increasingly creative dimension and who might be best regarded as composer/performers. Nehaus's performances have given a definitive character to a number of highly indeterminate scores. His 1966 realisation of Brown's graphic score "Four Systems" (1962) is a case in point. The score (fig. 6) consists entirely of horizontal lines of various

extremely rich, varying between a dissonant haziness reminiscent of filtered white noise and a bell-like clarity.

As well as crystallising scores of a highly indeterminate nature - establishing their identity through an aural rather than a notated tradition - Nehaus has also opened up more definitive scores to the possibility of multiple realisations. "Fontana Mix-Feed" is Nehaus's version of a Cage piece in which chance operations are used to produce a detailed set of performance specifications. Here Nehaus reinterprets the piece as in-

out their aural implications in terms of a particular instrumental configuration ("Four Systems" might have entirely different implications if adapted for violins). This rationale governs much of the collaborative work which the pianist David Tudor (b.1926) has carried out with John Cage. His version of Cage's "Variations II" (1962) is for amplified piano. The score consists of transparent plastic sheets on which are printed single straight lines and points. The sheets are randomly superimposed and perpendiculars are then drawn joining lines and points. Measurements of these lengths are then used to determine values for each of the six parameters: frequency, loudness, timbre, duration, point of occurrence and mode of attack. In adapting the piece for amplified piano Tudor found himself confronting a problem. For in working out the score's implications it became clear that the very nature of amplified sound was incompatible with the specification of discrete values for each single parameter. After experimenting with a continuous scale of complexity, Tudor discarded the intervening values in favour of two basic states: simple and complex. If a timbre were specified as simple it might have very few harmonics; if complex it might be changing in a rapid, aperiodic manner. In this realisation Tudor explores the effect of amplification upon very tiny sounds which would otherwise be inaudible. Each of the four channels of sound uses a contact microphone attached to the sounding board and a phono cartridge (of the sort into which needles are inserted for playing records) to excite the strings. In addition contact mikes and cartridges are attached to a variety of everyday objects, such as toothpicks and pipe cleaners, which are scraped delicately along the strings. Using this incongruous array of objects, Tudor draws forth from the piano an astonishing variety of sounds, alternately eerie and grotesque in character.

Fig. 6

thicknesses and lengths. In interpreting the score Nehaus bore in mind Brown's conception of space-time notation, whereby horizontal space on paper correlates with approximate time in performance. For his version Nehaus took line lengths as indicating relative durations and thicknesses as indicating relative dynamics. The constant thickness of individual lines led him to search for a percussive sound with a continuous dynamic character rather than the usual burst of the attack and sudden decay. He chose to realise the score using a variety of cymbals whose resonance could be extended through amplification. He found that contact microphones could not only extend the decay but also magnify different groups of partials within the spectrum (according to where on its surface the cymbal is struck), thus producing a great variety of timbre with an overall monochromatic texture. The sound of the piece is

determinate with respect to performance through the use of live electronics. The performance involves the interaction of feedback channels set up by resting contact microphones upon various percussion instruments which are positioned in close proximity to loudspeakers. Although the individual intensity of these channels is controlled from the score, the actual sounds are determined by the acoustics of the room and the positions of the mikes relative to the instruments and loudspeakers and instruments at specific moments (the vibrations cause the microphones to move around). In short, the factors here are so complex that, as Nehaus observes (15), "even if the piece were performed in the same space twice over with the same instruments and equipment, it would have completely different sounds and structures each time".

Many indeterminate and graphic scores require the performer to work

The Dutch composer Louis Andriessen (b.1939) has also been an innovative exponent of musical graphism. His "Paintings" for flute and piano (1961) provide no indi-

vidual parts but their spacious calligraphy does imply a style of performance which is at once leisurely and intensely virtuosic (fig. 7). The Greek composer Anaestis Logothetis (b. 1938) has similarly evolved a graphic idiom which, like that of Bussotti, exhibits a continual tension between notational exactitude and ambiguity of meaning. Logothetis has been active both as a composer and performer. His realisation of his own score "Agglomeration" (1960) is performed on a sound sculpture by the Viennese artist Ludwig Grise, which comprises a rich variety of metal rods, bells, strings and resonant metallic components. Improvising a response to his own score, Logothetis creates a richly textured sound tableau whose timbral richness evokes the Balinese Gamelan orchestra while eschewing definite rhythms in favour of an exploration of varying densities of metallic resonance.

Musical graphism, far from being anarchistic or permissive, is best seen in the context of a dialogue between composer and performer; or it can be seen as exploring the interface between composition and improvisation. Mario Bertoncini's score "Cifre" (1964–67) is exemplary in this respect. "Cifre" grew out of Bertoncini's involvement with the improvisation
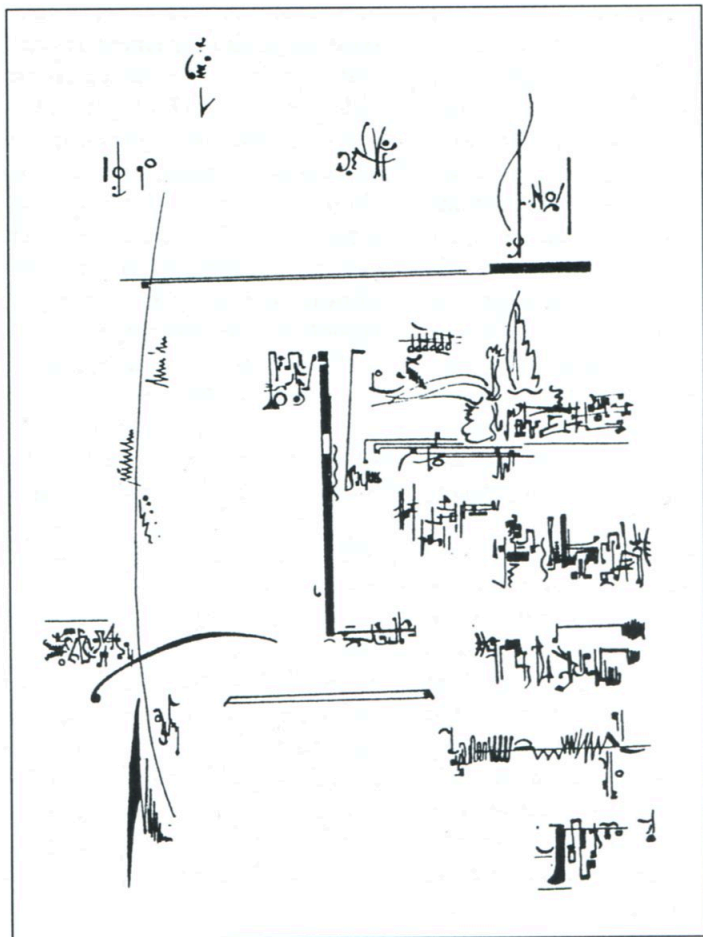
Fig. 7
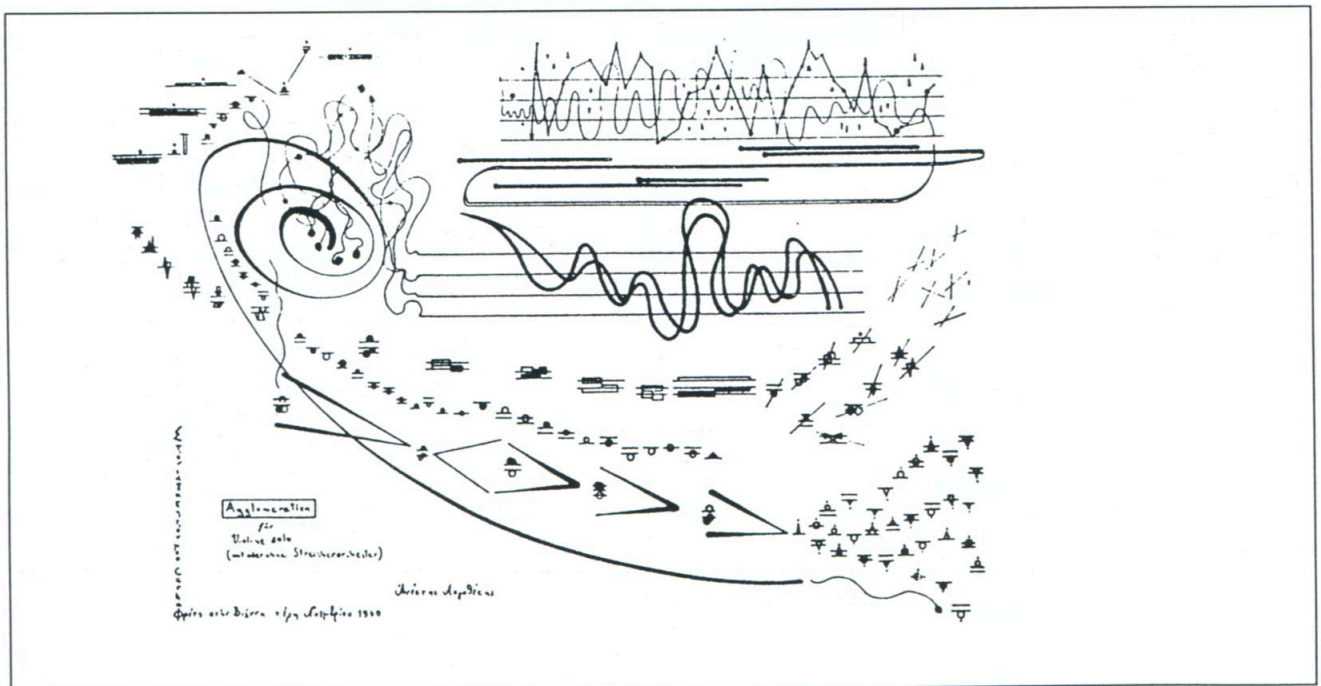
Fig 8 Logothetis: "Agglomeration" (1960)

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ensemble Gruppe Nuova Consonanza. The notation (fig. 8) incorporates symbols and markings which have traditional points of reference but are redefined in relation to the demands of improvisation and new or extended instrumental techniques. At the beginning of the score, for example there are shaded-in crescendo markings which symbolise the transition of a sustained note from piano to forte. At another point in the score, cowbells are represented as ovals lying on the strings; at another point sinus-like wave figures indicate how the player is to move over the strings with brushes. For the procedures delegated to the keyboard, fingerings are given similar to tablature in which the right hand fingerings receive arabic numerals and the left Roman numerals. The notation does not specify precise musical content but the style of playing and interaction between the players. Many of the actions indicated do not have specifiable outcomes; the figure F indicates the use of bow hairs

to excite the strings by means of friction, producing ethereal sustained sounds which are characterised by rich harmonics. Here glissando-like variations can be obtained by moving the hairs forward and backward along the strings (indicated by the figure E). Other variations can be obtained by wrapping the hairs around the strings and, while holding them taught, using the fingers to slide continuously up and down the hairs. "Cifre", however, is not the definitive blueprint of a composition; instead, like many of the more experimental works of the late '60s, it embodies an ongoing dialectic between the realms of composition and performance.

Cornelius Cardew's "Treatise" (1966-8) also evolved in the context of his work as an improviser. It was written for the express purpose of providing a common point of reference for the players in AMM. While not requiring the synchronisation of parts, "Treatise" nevertheless enables the divergent strands of the

music to coalesce at crucial points. "Treatise" presents a continuous weaving and intermeshing of a plethora of graphic symbols (of which a few resemble conventional musical symbols) into a mammoth visual design, the aural implications of which are not specified in any way. Any numbers of musicians, using any instrumentation, are free to participate in an interpretation of the score, and each musician is free to interpret it in his own way. The graphic elements appear in various guises: triangles, circles, circle derivations and other more intricate geometric forms.

One way of interpreting "Treatise" might be to correlate these shapes with conventional musical symbols - triads, trills, irregular tremolos, periodic rhythms, etc. This would be a conventional interpretation whereas a more experimental approach would be more spontaneous and intuitive. In practice, AMM have tended to combine both approaches since their characteristically eclectic style of playing embraces both tonal
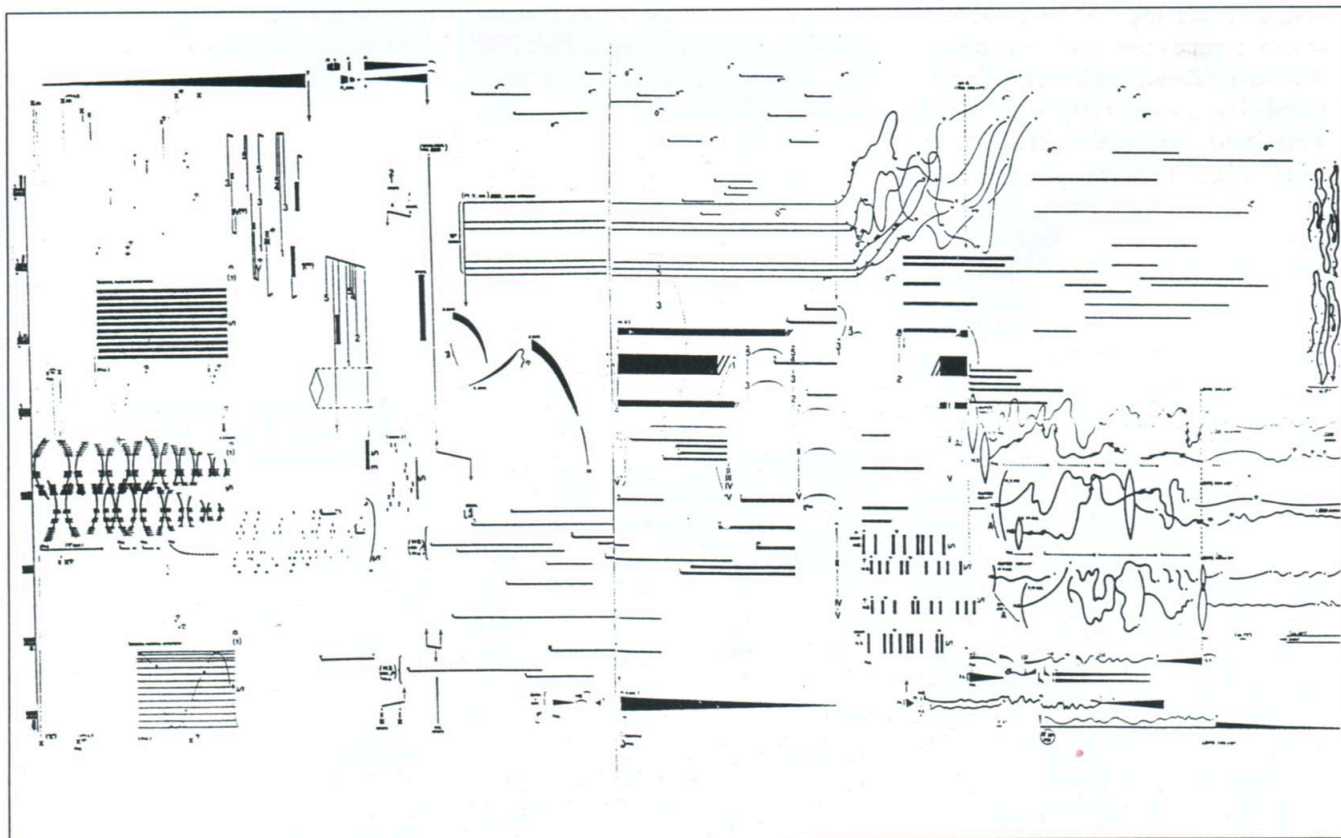

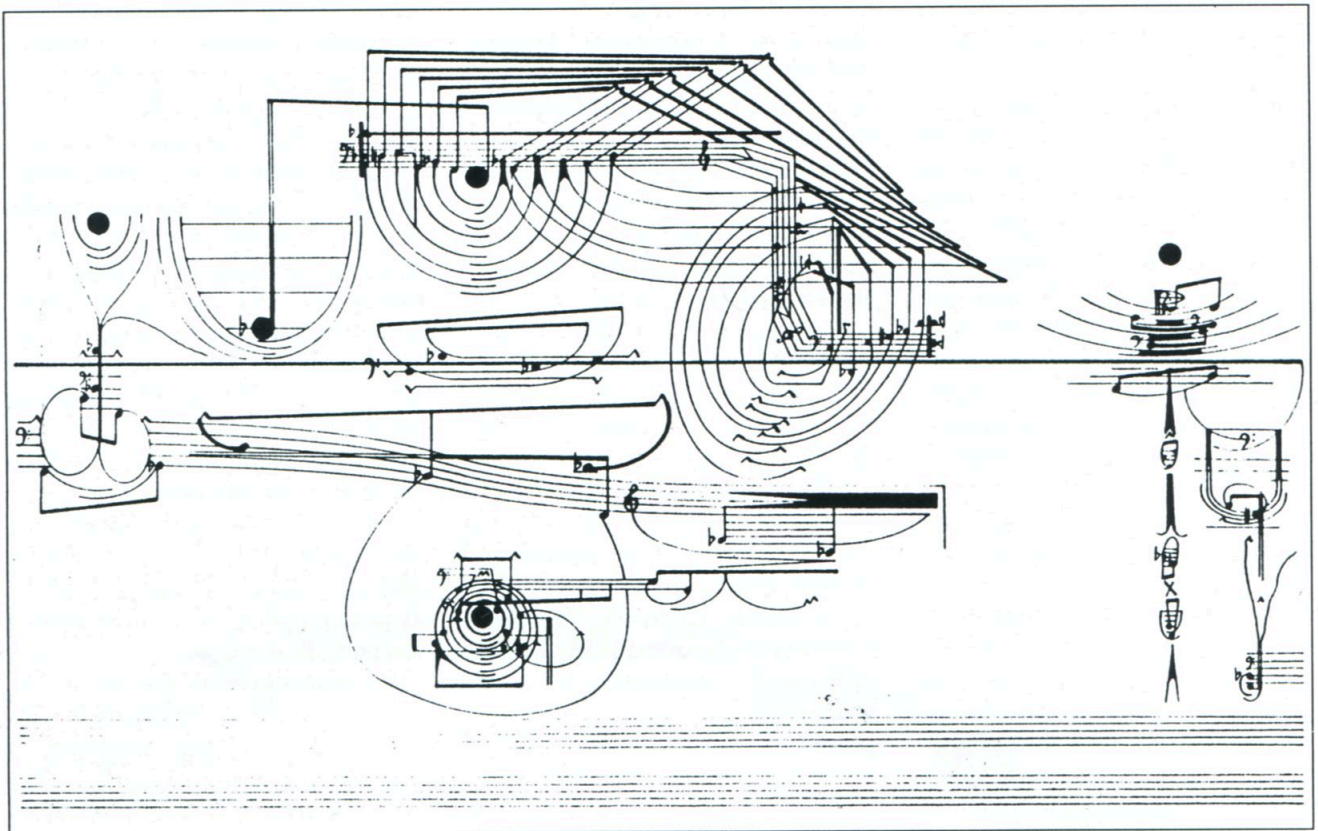Fig. 8 Mario Bertoncini: "Cifre" (1964-7)

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Fig. 9 Page 183 of Cardew's "Treatise"

structures and informal textures comprising layers of unpitched noise. The score itself, by combining partially recognisable symbols with enigmatic signs, embodies AMM's own dialectical interplay between the foreseen and the unforeseen, between premeditation and chance, between the known and the unknown. 120 pages in length, "Treatise" presents a monumental challenge which, as John Tilbury has commented, "is inhibiting to all but the boldest of spirits". "Its visual impact", he goes on, "disconcertingly puts most performances of it in the shade". Thus far from being permissive or inviting subjective arbitrariness, "Treatise" is exceptionally demanding of its performers. Rather than specifying the sounds to be made it offers the visual embodiment of a style of playing to which performances must aspire. Not surprisingly, it has rarely been played, except by the musicians for which it was originally intended.

This view of graphic notation as demanding rather than permissive can be generalised to indeterminate music as a whole. Tilbury has observed of Wolff's music (16) that the players, apart from listening for cues, are so involved in the act of preparing, timing and releasing sounds that they "have no opportunity for emotional self-indulgence". Far from being free to follow their own impulses the players have an extremely intricate task to carry out and it takes all of their concentration to do it efficiently, i.e. musically. Such music, according to Tilbury, "cultivates the prime qualities needed in performing: devotion, discipline and disinterestedness...". Cage has similarly challenged the view that indeterminacy involves an anarchistic, "anything-goes" philosophy. "Anything goes", Cage comments, "but only when nothing is taken as the basis" (17), i.e. when personal desires and intentions have been obliterated such that the player attains a Zen-like state of unfocussed, passive awareness and a willingness to identify with "no matter what eventuality". Insofar as indeterminacy embodies an ideal of freedom, it is a freedom achieved, not through self-expression, but through a transcendence of the ego. It is perhaps this ideal, rather than any specific concern with chance procedures, which defines indeterminacy as a cultural expression of the same period which saw the growth of Abstract Expressionism in painting.

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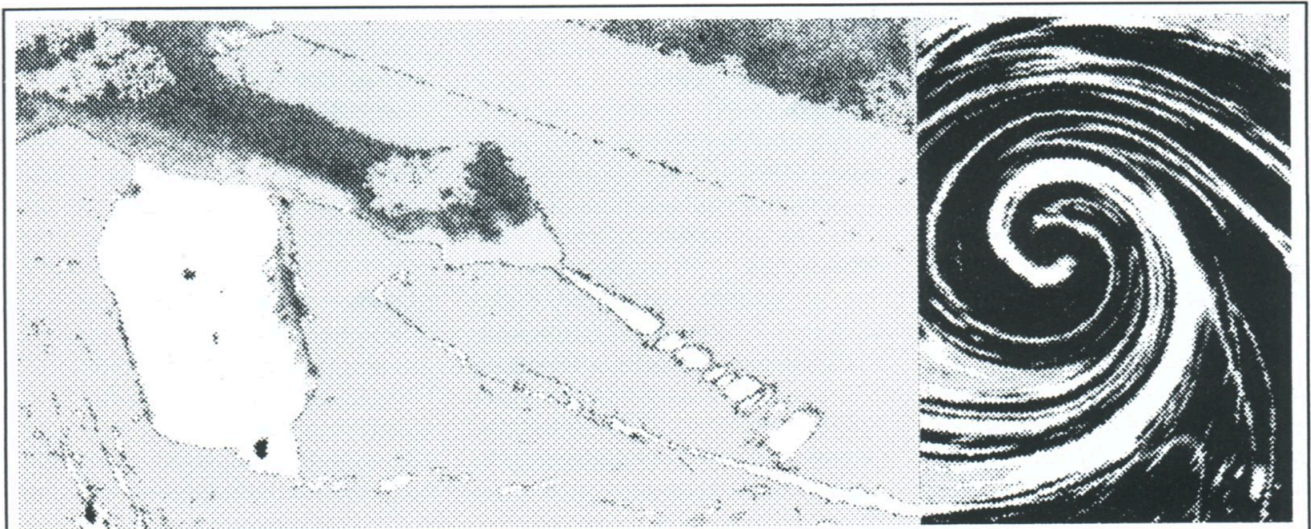
The Last Steps to Heaven
Allen Ravenstine

I never knew the one they called Little Epi. He was gone before my time in Hamburg. Sitting at late night tables cluttered with glasses, I was told that Little Epi was thought to be the reflection of Big Epi somehow released from a mirror to provide a confidant and companion. It was rare to see one without the other. For a number of years they were frequenters of the jazz clubs and strip joints along the Reeperbahn, and often more the focus of stories about a night on the town than the bands, or the women, who were paid to perform in those clubs. A part of going out in Hamburg began to be second guessing where Big Epi and Little Epi might turn up. They mesmerized club audiences with hurricane-like entrances in outrageous costumes, juggling items snatched from the hands of patrons frozen in disbelief. They engaged in acrobatics on the mountainous terrain of tables and chairs, and bouts of drinking that would have paralysed most mortals. And some nights the darkness delivered them in tuxedos, smoothly performing cryptic acts of theatre and then departing, leaving a white-hot echo in the room like that of an illumining artillery round.

There was plenty of conjecture as to their lives beyond those rooms. Few people were prepared to accept them as working class boys with a curious hobby. Many believed they were the declining offspring of the aristocracy, whose radiant energy was merely the result of a life with nothing better to do, and among those there was confident talk of family resemblance. There were also muttered assertions of homosexuality. But they were loved - even if the affection was a little green around the edges.

By day, Big Epi, whose name really was Epi, was a painter. He went to work in a bombed-out part of town, painting on enormous canvases in a derelict factory building

along the tracks. I never saw any of his finished works, only the overwhelming panels of stretched canvas hanging from tracks that ran among the roof beams in the drafty echoing room. Those and the unsettling A- ladders that stood near them, their yellow frames stretching up like spidery legs splattered with the bright colours of paintings that had left to hang in the big galleries of New York and Paris.

There was a sculpture in the centre of his studio, a location that felt dangerous in that precarious room. Clearly, it was placed in a way that made it an obstacle to certain movements, and one that enhanced the quality it had of tapping you on the shoulder and reminding you of its presence. The focal point of the piece was a thickly varnished step ladder, a short ladder, the kind a more pedestrian painter might use to cut in a wall colour along the ceiling line. Around this ladder, coiling in wide rings, were lengths of heavy wire about the thickness of a thumb. The coils were painted in bright colours as if to resemble strips of blowing crepe streamers, yet somehow they gave more the appearance of stifling smoke. Perhaps that feeling was brought about by the jagged pieces of steel and glass that rose like parti-coloured flames in suspension from the round cabaret table base.

To the best of my recollection it was the only sculpture Epi had ever done and I remember coming upon it and thinking that it must be some monument to his own work - the step ladder he used on the first painting that went big-time. A sort of artist's version of the dollar bill that small enterprises often frame and hang on the wall behind the cash register. Epi had seen me there musing and he came over from mixing his paints to smile at me and search for words. He did not like to speak English and most of the time

it was not necessary, we communicated through gesture and the interpretations of those who were willing to speak for us. But we were alone that day and so, speaking carefully he said, "It is called, 'The Last Steps to Heaven'." He continued to smile while he searched my face for some indication that he had gotten the translation right, and finding something there that satisfied him he laughed out loud. I laughed too, but I had no idea why.

In those days I was working in a rock and roll band and when we came to Hamburg we stayed in the Hotel Barcelona. Epi's wife Katrin would come by late in the afternoon to take us to the Rattingerhof - a small nightclub that she booked bands into. The club was a one storey building in a row of storefronts built after the war. It was similar to a New York club, a shoe-box-like room, with the doors to the street at one narrow end and the stage at the other. A shiny black bar ran down one long wall, and behind it, reflected in the mirrors and the deep red lights, were rows of exotic looking bottles with unpronounceable names. At night the fluorescent tubes in the ceiling ran in a herringbone pattern of white and green and yellow.

On that night, when the show was over, Epi was there by the side of the stage. He called me over with his hand and then motioned me to lean over to him. He grabbed me around the neck and pulled me to his stubbled face. He kissed me on the cheek and said, "Thank you," only it came out, "Sank you." The room was sultry with body heat and the air above our heads was a cloud of blue smoke. I needed to get outside. Epi looked for a cab while I stood on the sidewalk breathing the cool air deeply.

We rode to another part of town and we scoured the bars looking for Martinis. Epi refused to do the talking, he told me that we would get a

better drink if the bartender knew they were for an American. We drank them straight-up with olives. We drank them in chairs along the sidewalk, listening to the sound of traffic on old roads. Sometime shortly before dawn, in words that drifted lazily from English to German and back again, Epi told me that he was five years old on the night Dresden was bombed into a firestorm. He remembered being awake that night and looking out through a small triangular window near the peak of the roof above the stairs. The sky was flickering through shades of pink and orange and red. It was very beautiful, he said. His mother was running through the house yelling. Epi heard his name called, but he did not answer, he watched the colours in the sky and felt no sense of danger. His mother found him, snatched him up under her arm and lugged him outside, bumping his head on the door jamb as she passed through. She took him to the apple orchard where his brother and sister stood watching the pillar of fire over the city some kilometers away. He remembered the twisting blaze rising up to the clouds and the wind that howled through the naked branches on its way to the flames. He wished it would never end.

In his memory it seemed not many days later that he was trying to sit patiently on the bed with his brother and sister while his mother told them about the journey they had to make. The war was nearly over. Soon the Russians would be in the village, and she did not want to be there when they came. They must surrender, she told them, but not to the Russians. They must run away. The Americans were a long way away to the west and they must find them. There were no trains and the roads were not safe and there was no petrol for the car anyway, they would have to walk. They would travel at night and hide in the woods during the day. They must act like the foxes. They must be brave and serious.

They left the house on a night when the moon was dark. At first it was the adventure that Epi thought it would be, and his imagination ran wild in the darkness. The glory of war was in the forest, he flashed his steel in the starlight and sent the enemy running. But all too soon his legs grew tired and the little suitcase tugged at his fingers and pulled the joy of adventure from his thoughts. He wanted to go home. They went for three nights across fields and over wooded hills. There was still snow in the places the sun never reached and the streams ran thick with cold. "It was too far," he said, "I was cold all the time. I cried the whole way." They made it to an American camp where they were given hot food and coffee. There were blankets and a tent to sleep in, but there was no heat. Epi remembered there was mud everywhere and his mother cried all the time. He didn't understand why they had left home.

Eventually they were resettled in a village near Fulda. They lived in a small house; it wasn't as good as their old one, but it was all right. One day, when the first summer was nearly over, a man came to the door claiming to be Epi's uncle Heinrik. Epi thought he recognised the man, but not as an uncle. He thought the man looked like his father, only old and sad. His mother hesitated in the doorway, and then kissed the man on the cheek and invited him in.

Some days later the children went to her, with the oldest as spokesman and told her that they did not have an uncle Heinrik. She said that their memory had been affected by the war, that they most certainly did have an uncle Heinrik, and that he would be living with them from now on. Their father had been killed by the Russians, and they should feel very fortunate that his brother had survived and had come to live with them and help with expenses. They owed him a great debt and he was to be treated with respect. They did not speak of it again.

The man got a job at the local school teaching mathematics. He slept on a battered couch in the living room and he kept a certain distance from the children. Epi's mother ran the household and the man made no effort to interfere. The children became less sure than
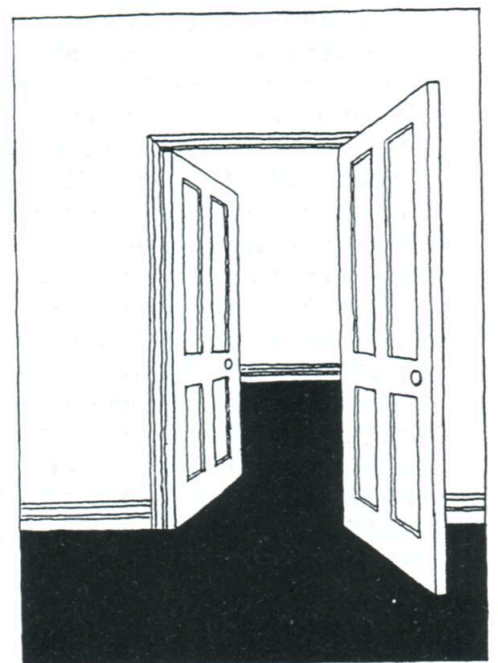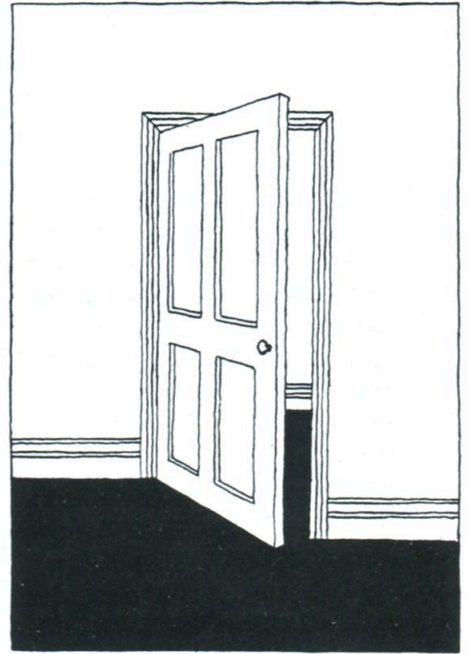
Heinrik was really their father, but Epi never believed that the man was his uncle. The war had not affected his memory. At night he stood in the darkened corner by the stairs and watched the man in the big stuffed chair grading papers. He did not like Heinrik, and he didn't care that he should be grateful. At thirteen he ran away from home. He went to Hamburg and lied about his age. He worked in a steel mill, at first pushing a broom and then later chipping coke from the catwalks around the stacks with a jackhammer. There was whiskey and after a time there were women to rub against his skin, but it wasn't much comfort.

Only after Heinrik was dead and Epi's mother was sure that the cancer was killing her, did she admit to him that the man was really her beloved Johann. She begged the children to forgive her, and to try to understand. She and Johann had been very afraid. The Russians wanted to try him for war crimes, and the Americans would turn him over if they knew. He was innocent, they must believe her when she said that. Epi believed that his father was innocent, and he told his mother that he forgave them both for the lies. But he was comforting an old woman, and sitting in the early morning darkness, I could see the hurt that was still in him, through the aging hands and the short silver hair, through the wire rim glasses and the gin smile.

We staggered through the streets until we saw a cab, and then we rode the rest of the way to the studio. Epi was not living at home any more, Katrin had told me. She had asked him to leave. There was another woman, a younger woman, the usual story.

They put that aside the next night though and we all met at the apartment before going to dinner. Katrin brought many bands to Hamburg to play in the Rattingerhof, and most of them were invited to the apartment at one time or another. The activity there centered around a large white table that sat in a white room at the end of the hallway from the front door, and it looked out through French doors across the balcony to a park and a green church steeple beyond. Many of the musicians who came there arrived in ferocious costume and were a curious contradiction to the ordered and expensive surroundings, but the contrast was nearly blinding when Epi and Katrin's daughters were in the room.

Marta and Helga were blonde-haired and blue-eyed, and they were steeped in old-school manners. They were unafraid of strangers, and not put off by the foreign languages they heard around the big dining room table. They watched the faces and giggled at the sound of new words. They arrived from school in lacy pinafores and shiny shoes and were alive in the face of guests who were marked with tattoos and wore studded black leather. Marta and Helga broke down their mother's fiery visitors, melted them into older brothers who offered horsey-back rides and fairy tales.

Epi had never been very much a part of that life. He went to his studio early in the morning before the girls had gone to school and he rarely came home before the light had faded. He was polite to Katrin's guests, but he did not sit with them around the table. Instead, he tended to stand a few feet away by the window, usually with a drink in his hand. He looked on with a smile and whenever someone included him in their search for eye contact while speaking excitedly about a band they had seen or some new song they were working on, Epi would nod as if engrossed. But rock music was not his dish. For Epi God had come to earth in the form of Charlie Parker, and during the days when "Bird" was in Europe, he had sold whatever he had to to get a car and he and Little Epi had followed Parker's tour. He spoke of those shows with his hands, while his eyes rolled up toward heaven. He did not have much use for records. There was only live music for him, it had to be made in a room with an audience, only then could the magic happen. Music was talk, a kind of language that rose above words, there had to be a conversation, it couldn't happen with records.

We drank an orchestra at dinner that night. It started when Epi ordered some wine that had a trumpet on the label. Pointing to it with a grin, he called the waiter back to the table and said something to him that made Katrin laugh. After that more bottles came and on them were timpani, and cellos, and violins. He was stumped by the time it came to the cognac, but we all applauded the effort. Epi stood and took a bow. "Promise me you will always make your music live," he said.

We walked slowly back to the apartment. Epi and Katrin walked ahead of me, each with their hand in the other's rear pocket. I watched them and imagined Marta and Helga at home in their beds sleeping sound and secure, and the babysitter in that immaculate and expensively furnished living room, dressed in a leopard-skin leotard, black leather vest, motorcycle boots, a spiky blond Mohawk and multiple earrings. He had been playing the piano and singing *Danny Boy* in a pure Irish tenor when we left, Marta and Helga listening to him. They were sitting with their ankles crossed, their hands folded in their laps, blue ribbons in their hair - enchanted.

There was spring in the air over Hamburg that night, and smelling the green on the leaves and the scent of life that a south wind always carries, I remembered what Katrin told me about the sculpture in Epi's studio. "The Last Steps to Heaven" were the steps Little Epi had taken to a leap with a rope around his neck. He had left no note, and no one had seen it coming. Epi stopped painting for a year or so, he went to the bar and he stayed there. And then one day, as if waking up from a long sleep, he went to the studio and made the sculpture, working non-stop. He had decided to forgive Little Epi, and it was clear that he had decided something else too; there's only one place we're going, and sooner or later we all get there. It might as well be heaven.

Illustrations: Les Coleman

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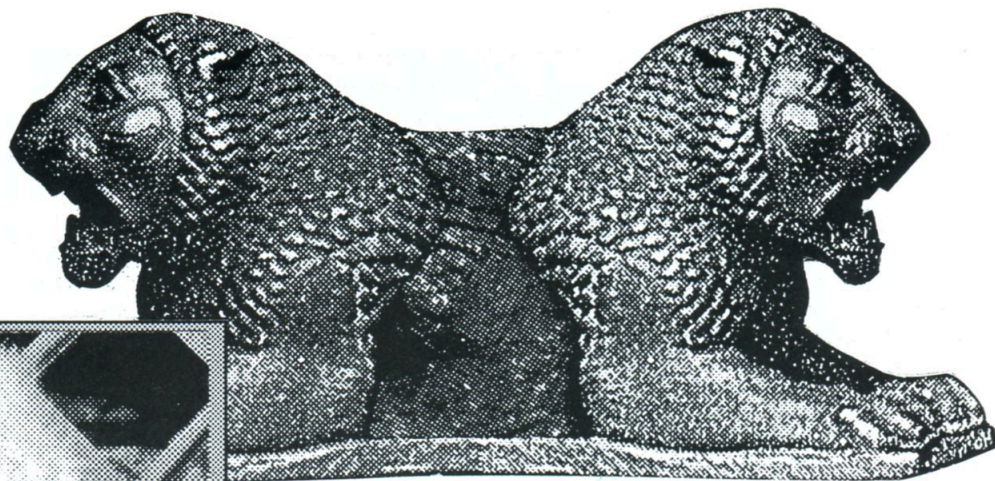
Koongoortoog
Track (3.50)
Performed by
Kaigal-Ool Khovalyg (voice), Albert Kouvezin, Sayan Bapa, Alexander Bapa.
This piece is taken from a cassette and is used by permission. At time of going to press further information has not yet reached us. We will include this in our next issue.

The Adenoid Quartet
Ostritch Wheel (6.58)
Written by Django Bates.
Teena Lyle - tuned percussion.
Eddie Parker - flutes.
Ashley Slater - bass trombone.
Sarah Collins - piano.
This piece was written specially for us by Django, who was intrigued by the line-up. It is really a miniature concerto for trombone and, despite appearances, is entirely scored. The title appeared during a telephone conversation with the composer.
The Adenoid Quartet is about 4 years old, but because Ed, Ash and Teena are all very busy most of the time and I can't pay them very much, we don't play that often. I knew I wanted to find people who were very committed to all aspects of music since I left university, and generally I have failed to find this amongst classically trained musiciains. The Adenoid Quartet grew out of my desire to work with players I really respected, and Ashley's wanting to be stretched more than his usual areas of playing demanded. We shall add Steve Buckley (Saxes) and John Parricelli (Guitar) shortly and are assembling a repertoire for this line up. If anyone is interested in writing for us, please call London (0)71 226 2676.
Contact: Sarah Collins, 100 Highbury Hill, London N5 1AT, UK.
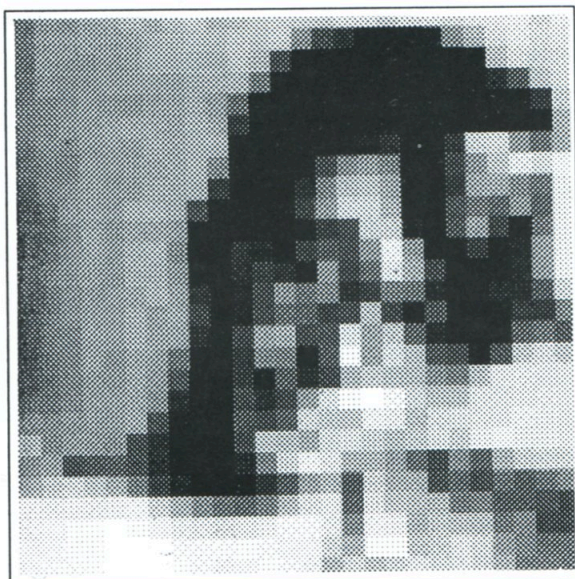
John Oswald
Z (0.15)
John Zorn/Naked City Plunderphonicised.
47 edits of 35 sound slices, each between 1/20 and 1 second long. Total time 14 seconds.
See elsewhere in this issue the interview with John Oswald about the travails of his "plunderphonic" CD. Oswald has written extensively for dance (many pieces of which feature on 'Discosphere' - ReRJOCD), his own 'Mystery Laboratory' cassette series and appearances on various collections, as well as the not-for-sale "plunderphonic" EP and CD. A new piece, 'Plexure', is due shortly to be released in Japan.
Contact: Mystery Laboratory, Box 727, Station Toronto, Canada.

Tom Nunn
TP2 (7.07)
Tom Nunn - techphonic plate.
Doug Carroll - engineering/processing.
I design and build original musical instruments specifically for improvisation, with elements of non-linearity, unpredictability or ambiguity. I make, essentially, two types of instruments: electroacoustic percussion boards (EPBs) and space plates. The instrument heard here, Techphonic Plate II ("Place of Three Moons"), is one of the largest EPBs, measuring 8' x 3' and standing at shoulder level using two 1/2" pipes mounted to separate plywood disc bases (see picture).
EPBs typically consist of 3/4" high-grade plywood sheets (of various size/shape) with sound-making devices attached, such as threaded steel rods, bronze rods, nails, springs, music wire, combs and textured surfaces of various colours/shapes. These devices are played in a number of ways using different implements, such as fingernails, guitar picks, small rubber stick-mallets, knitting needles, combs, small bows etc. A pickup (contact microphone) is attached to the backside of the board at an optimum location to provide amplification of the sounds travelling through the board itself; there is no resonator. The amplified signal is then digitally processed to extend the timbral palette further.

The first EPBs were horizontal to the floor, like tables; more recently, I've used stands which support them at a 45-degree angle, somewhat like a podium. However, the audience's perspective is that of the player's. Though the player's back is to the audience, his actions and the instrument itself are more readily visible. In the case of the Techphonic Plates, the performance becomes a sort of dance.
Indeed, my purpose in making the Techphonic Plate series has been to integrate three elements - music, sculpture, and dance - into a single expression. Whereas almost all of my other instruments have been symmetrical by design (because of their "instrumental" nature) the Techphonic Plates represent my attempt to create visually interesting, non-symmetrical graphic images using the devices, without, of course, compromising their accessibility. It is, in a sense, "painting with objects on a canvas of plywood."
I do this work because I like to "walk on fences," and it presents many to walk on: aural/visual, structural/intuitive, hi-tech/low-tech, static image/moving image, etc., etc. And the thrill of walking on fences is challenging barriers to a holistic art/life practice in which everything comes to bear on any given moment.
Tom Nunn.
Contact: Tom Nunn, 3016 25th St., San Francisco, California 94110, USA.

Dildadafish
What's the Point? (2.04)

The idea of Diledadafish is to create music without a very deep knowledge of music theory: trial and error and listen - to arrive at a nice tone object, or not. Most pieces grow out of long experimental sessions, trapped on tape at the right time. The random is an important partner. Our playground is assembled from readymades: kitchen utensils, home made electronic devices (vocoder, ringmodulator), sampler, synthesiser, voice to midi converter and computer, sax, guitar, bass, noises.

Dadagraphy:

Western & Osten (MC 1984)
NOP No. 1/9 (Fanzine 1983-5)
NOP Tonkonserve (MC 1985)
Wallpaintings (Walls at BIEL 1985)
Diledadafish (MC 1987)
Boule de Naphthaline (LP 1988)
Mothball (CD 1991)
Contact: Yucca Tree Records, Statthalterstrasse 60, CH-3018, Bern, Switzerland.

Lesego Rampolokeng with The Kalahari Surfers
The Desk (3.32)

the DESK is in an office
the DESK has a telephone
the DESK speaks to us
the DESK says that now is the time
the DESK has changed completely
move everything to one side... move it all across
across to the left... that's better... a little bit more
that's fine... I said that's looking good
the DESK reiterates the view...
the DESK maintains that...
the DESK reaffirms its commitments to...
the DESK should not be criticised
said a statement from...
everybody stand still... hold it... hold it... what's happening
something's different, something's changed, we
will not allow it... keep moving... move your body... to the left
the DESK has a problem
the DESK is our future
the DESK is a joke
don't get on the wrong side of the DESK
will the DESK be used as a platform?
OK OK hold it... hold it... this has gone too far
I'm gonna have to make a statement
I'm gonna write it up here
here on this board
now, where's the chalk?
Can everybody see... can everybody see clearly?
there are only seven words in this statement
remember them... can you read it?
is it clear? does anyone have any questions?
yes... you with the glasses... what's your question?
does the DESK have a mandate
does the DESK have a chair
who is on the DESK
who is behind the DESK

Words and Music: Warric Sony
Discography:
End Beginnings (Shifty Records, SA, 1992).
Kalahari Surfers only, selected:
Own Affairs (Gross National Products/Recommended 198).
Living In the Heart of the Beast (Recommended, RR 24).
Sleep Armed (Recommended, RR 26).
Bigger Than Jesus (Recommended, RR 38).
Contact: c/o Shifty, PO Box 27513, Bertsham 2013, Transvaal, South Africa.

Peter Machajdik
Death in 40 Pictures (1.53)
Peter Machajdik - electric guitar, Walkman.
Martin Burlas - bass, trumpet.
Recorded at Vitebsk Broken Studio, Bratislava, Sept. 1991. Produced by PM and MB. Co-produced by Olga Smetanova and Daniel Balaz. Engineered and mixed by Juraj Stubniac.

Peter Machajdik. From 1986: Music environments and soundspaces inside and open air; audio visual and multimedia projects. From 1987: Contributor to foreign language music magazines (Keyboard, Jazz Forum, Crescendo &c). From 1988: Member of Transmuseq Comp, an ensemble of musicians, sonic and other artists. Prizewinner at International Competition for Electronic and computer Music at Varese. Improvised music workshop with Vinko Globokar and electronic music course in Amsterdam. 1990: Founded Vitebsk Broken. 1992: DAAD Scholarship.

Cornelius Cardew
Vietnam's Victory (6.12)
On the 22, 23, 24 November 1991, Goldsmiths' College, London, held a weekend of events commemorating the life and works of Cornelius Cardew. This recording was made at the final concert on Sunday 24th in the Great Hall. It was one of seven pieces played, mostly by musicians at the College. Vietnam's Victory was conducted by Dave Smith. This recording was made on DAT by Keith Rowe. Special thanks to Keith Rowe, John Tilbury and Horace Cardew.

Tizanio Popoli and N.O.R.M.A.
Circus Music
1. Introduzion (0.34)
2. la diva (0.46)
3. L'indiano (2.24)
4. La ballerina (2.27)
5. Il cinese (1.00)
6. Finale* (1.31)
Composed by T.Popoli.

N.O.R.M.A. is a project of Tiziano Popoli and Massimo Simonini. It is the result of the common work between two groups of musicians that have never worked together before: Giorgio Fabbri Casadei, Massimo Semprini and Gerard Antonio Coatti from the group Ars Flexis and Ella Guru; Paola Garavaldi, Massimo Simonini, Paolo Grandi and Tiziano Popoli from the Popoli-Dalpane Ensemble.

We worked together for about 10 days between September and October 1990 in Massimo's living room, trying to find a similar musical language. So we realised three suites: "Suite from Psycho" (B.Hermann), "ChiNOISErie" and "Circus Music" (T.Popoli). We taped all the work live, without overdubbing, directly to DAT. "Circus Music" comes from a musical score composed for Arturo Brachetti, a quick change artist who performed this act for Thames Television last October. It is a series of short pieces, every one of which sounds like a circus act. For the present version we would like to

think of it as an hommage to the great Italian composer, Nino Rota, and to the music that he wrote for "The Clowns" by Federico Fellini.

N.O.R.M.A. is a mobile and nomad group that periodically meets to elaborate new ideas. At the moment it comprises:

Giorgio Fabbri Casadei: guitar.
Gerard Antonio Coatti: trombone.
Paola Garavaldi: violin.
Paolo Grandi: fretless bass.
Roberto Monari: sound engineer.
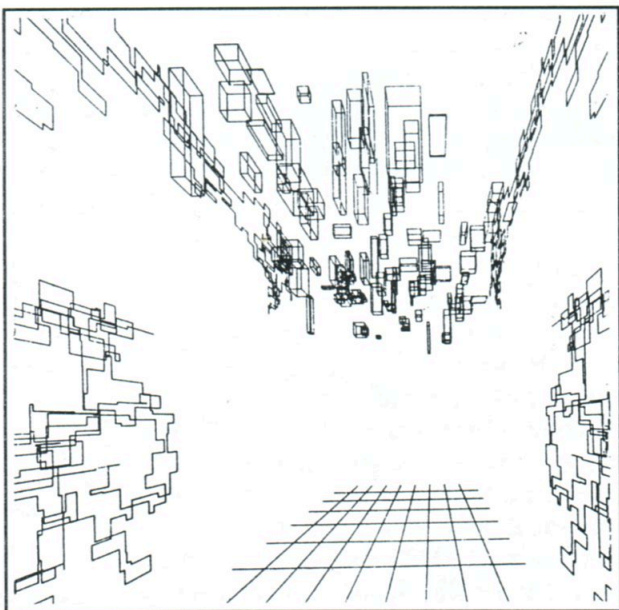Tiziano Popoli: sampling & electronic keyboards, "samplercussions".
Massimo Semprini: alto sax.

Massimo Simonini: records, CD, tapes, objects, percussions, Casio SK1, voice.
(* Final voices by Emanuela Grimalda and Alterugo from "Il bum della radio", inter(con)ferenza telematica by Massimo Simonini.)
Recorded October 1990 by Roberto Monari.
Arrangements by T.Popoli & N.O.R.M.A.
Produced by T.Popoli.
Thanks to Chris Cutler, Franco Visioli, Roberto Monari & N.O.R.M.A.
Contacts: Tiziano Popoli, v.Gramsci 1, 41058 Vignola (Mo) Italy
Massimo Simonini, v.del Monte 1, 41058 Vignola (Mo) Italy

Al Margolis
Sonnet 2 (2.32)

From a cycle of 22 sonnets. This is "A Thursday of Fitzgeralds" by Jay Nora. All 22 sonnets are being set as a song cycle by Al Margolis for voice, guitar, oboe and accordion. It may or may not be performed as a stage piece for live musicians and tape. At present it is still a work-in-progress.

All that a window is queerest of inventions
All that oscillates and darts past it
Framed by this simple rectangular structure
A window all windows from this window I gaze
A window all windows from this window
Let the night quiver before it
Let the sun scorch it in sheer desperation
A window all windows from this window I muse
My prison my instant of knowledge a solitary frame
Friday afternoon waiting on a saxophone night
The modern plague see it in my eyes
I died a negro on 28th Street see it in my eyes
I smelled basil and at once closed my eyes
A woman's shape under my hand motionless and cold

Music by Al Margolis. Text, Jay Noya.
Al Margolis - guitar.
Mitzi Mekville - voice.
Brian Charles - oboe.
Matty Jankowski - accordion.
Recorded in 1991, engineered by Al Margolis, Mixdown Margolis and Dan Andreana.
Contact: If, Bwana, PO Box 150022, Van Brunt Station, Brooklyn, NY 11215 USA.

David Myers
"Title Unknown (No.4)" (2.35)

"All sounds are originated from an old 1950'S LP called 'Hot Percussion', sampled and played live to tape with an Atari computer and algorithmic/rhythmic composer software."

David Myers usually works under the name "Arcane Device"- several pieces and one LP of his have appeared on ReR, and many other projects exist, all of which may be obtained direct from him at 228 Bleeker St., Number 8, New York, NY 10014-4420, USA.
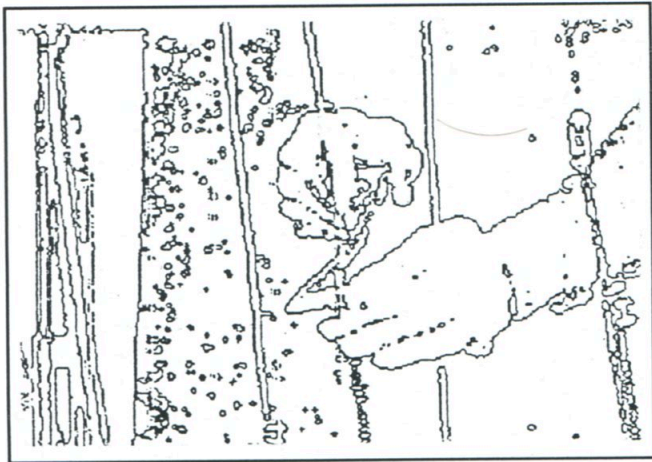
ZGA
Lost Title (3.12)
Nick Sudnik: Ring Modulator, Keyboards, Iron Objects, Voice.
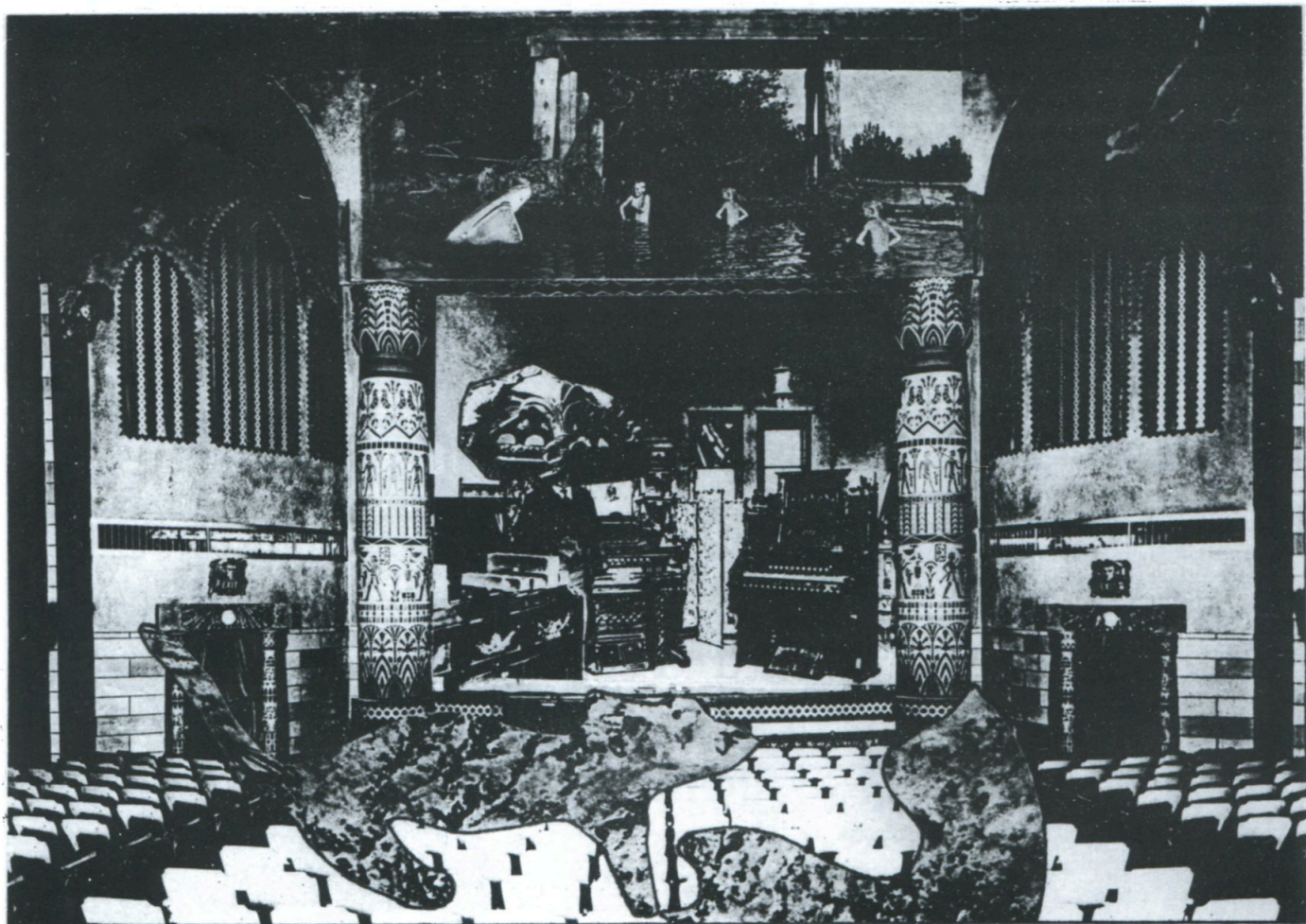Alexander Zhihlin: Bass, Percussion.
Vadim Petrenko: Guitar.
Michail Judenich: Drums, Percussion.
Recorded winter 1991 at 'Showimpex' Studio, Riga, Latvia.
Engineer Juris Moritz.
Contact: ZGA 'The Wing', 10 Pushkinskaya St. Apt N1, St. Petersburg, 191040, Russia.

Biota
Walk Aside (4.04)
Photo-collage by Tom Katsimpalis
Composition/Mixdown by Biota
Recorded August 1987 and mixed February 1992 at DYS Studio, Fort Collins, Colorado.
Engineers: William Sharp and Mark Piersel.
Tom Katsimpalis - electric and bass guitars.
Mark Piersel - acoustic guitar, trumpet, percussion.
Steve Scholbe - alto sax, bass clarinet, flute, ching, percs.
William Sharp - processing, bagpipes.
Gordon Whitlow - piano, organ, bass guitar, banjo.
Larry Wilson - drum kit.

Biota-Mnemonists is a sound and visual group. Works available include:
Horde (LP ReR C21)
Gyromancy (LP DYS 10)
Rackabones (Dbl LP DYS 12-13)
Awry (10" BAAL 333)
Tumble (CD ReR BCD)
Bellowing Room/Tinct (CD ReR BCD2)
Almost Never (CD ReR BCD3)
Contact: c/o Bill Sharp, 910 W.Mulberry, Fort Collins, Colorado 80521, USA.
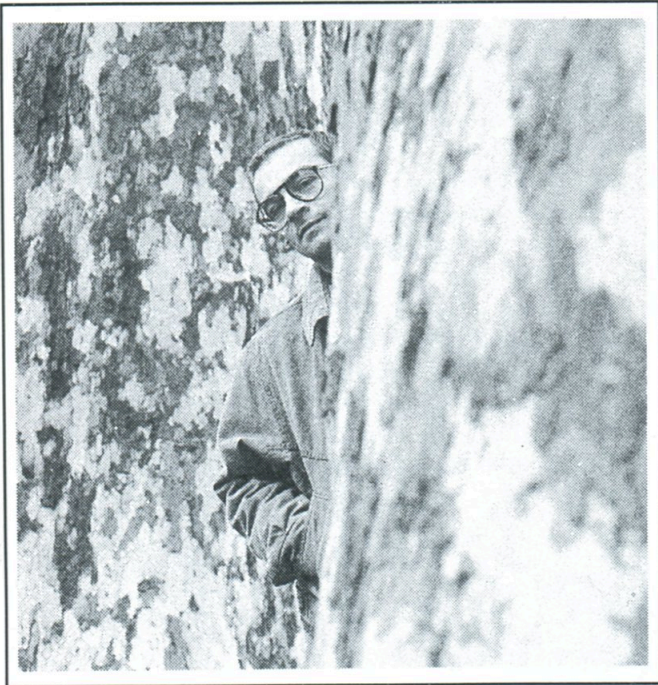
Martin Burlas
The Cross and the Circle (extract) (5.23)

Original version for 2 live trumpets and ambient sounds, completed in 1989. This live version from a concert by Vitebsk Broken, Kurzweil played and sampled by Martin Burlas.

Its main theme is the self destruction of a man, with romantic prologue...

Martin Burlas was born on October 23 in Bratislava, Czecholovakia. He works as a music producer in Slovak Radio. He is a member of the group 'Veni' and leader of the ensembles 'Sleepy Motion' and 'Vitebsk Broken'. Later this year his opera 'Rosy Kingdom' will be premiered in London with the Mecklenburgh Opera conducted by Ann Manson.

Discography:

Simultaneous Quartet (Opus 911 2115, 1988).
Piece on 'Veni' CD (Globus International).
Sleepy Motion CD (Globus International).
9 Easy Pieces and Other Songs CD (Zoon Records).
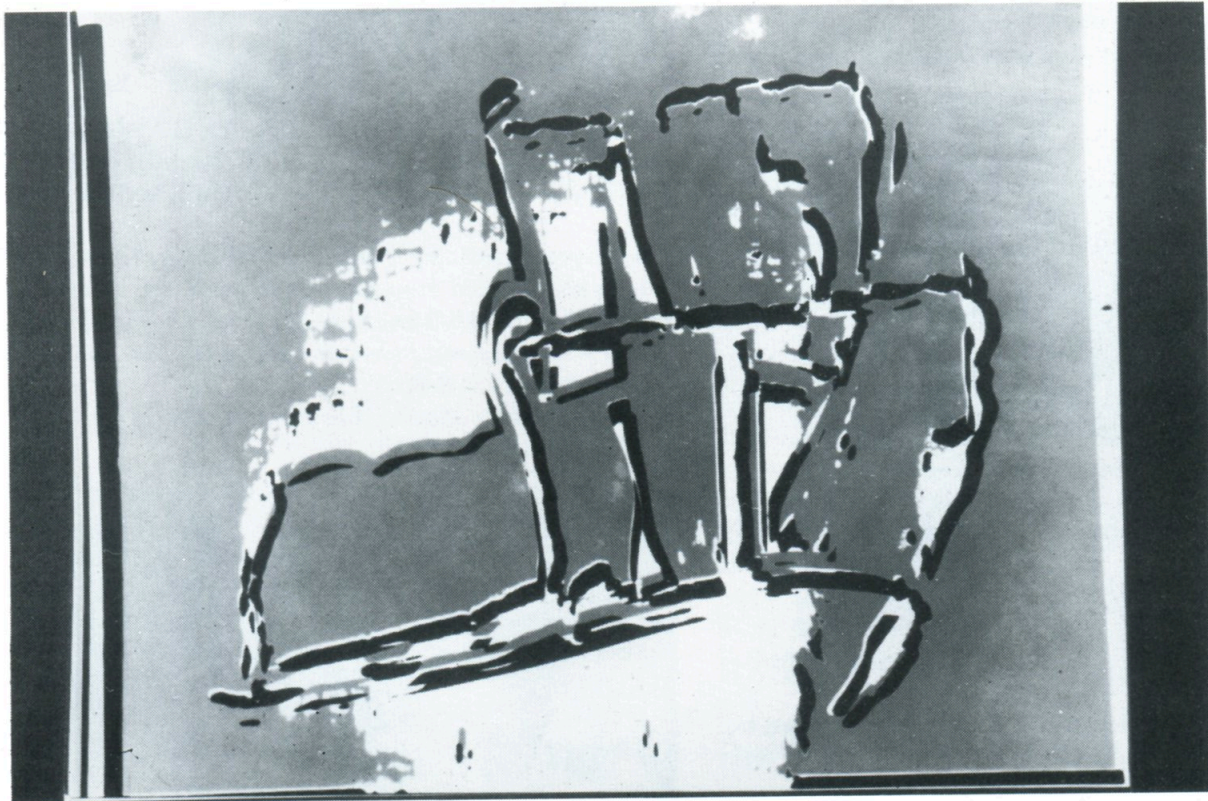
Blitzoids
Chair (photo project piece) (3.27)

Photo: Scott Johnson.
Music: Blitzoids.
Recorded 1989 at Lisle, Illinois.
Engineer: Chris DeChiara.
Instruments: Radio, Keys, Sink, Fluorescent Light, Door, Chair, Table &c.
Blitzoids are: Chris DeChiara, Jim Nickels, Steve DeChiara.

"This piece was comprovised with ordinary household objects and the sounds they make. These sounds were distorted and treated with a minimal amount of processing gear: a cheap digital delay and harmonizer, an old distortion pedal and a reverb unit. The photo is of a rocking chair that has been distorted while being developed."

Selected Discography:

Stealing from Helpless Children LP
Look Up LP
- on compilations -
Ralph Records 'Potatoes Vol. 1'
ReR Quarterly 0201
Panic Records 'What is Truth. Vol. 1'
FOT Passed Normal Vol. 4.
Solo CD in progress from Chris DeChiara 1993.
Contact: PO Box 1421, Lisle, Illinois 60532, USA.

Thinking Plague
How To Clean Squid (5.29)

Written and arranged by Johnson, Bradford, Fleishman, Drake, Rick, Arsenault.
Performed by
Mike Johnson - guitar, voice.
Bob Drake - bass guitar, violin, voice.
Mark Fuller - drums, percussion.
Lawrence Hawgseth - synthesisers (left).
Eric Jacobson - synthesisers (right).
Susanne Lewis - voice.
Live sound engineered by Greg Heimbecker. Live concert recorded at StageWest, Denver, Fall 1987.

Pull tentacles firmly but slowly from body sac.
Cut them crosswise above eyes.
Remove thin clear cartilege from body sac.
Leave body intact.
Intestines should come out with tentacles.
Hold body under cold running water while peeling away spotted outer membrane.
Turn body sac inside out.
Rinse away any grit or tissue still attached under running water.

The performing version of Plague assembled for concerts in 1987 was the first since players on the first LP, "A Thinking Plague", had performed in 1983. The group meanwhile had remained in the founding care of Mike Johnson and Bob Drake and operated only as a recording project, gathering Susanne Lewis, Mark Fuller and Eric Jacobson on the way to the second LP, "Moonsongs". In early 1986 a brief essay toward live performance proved shortlived, leaving only the collective arrangement of Johnson's "Etude for Combo" which appears on "Moonsongs" to mark its passing.

At the time all of us were playing in other groups, less internationally, but better locally appreciated, and were struggling otherwise to make a living. Devoting endless hours to rehearsing an "Art Rock" band that could hardly support even one of its members made more demands than most of us were either capable or willing to meet.

However, by June 1987, Mike Johnson persuaded the "Moonsongs" group to try again. Bob and Mark were playing in Singapore with a progressive Jazz/Rock group (Bruce Odland Big Band) through June, and Mark went directly to Bali (he's studied Balinese and Indian percussion) and returned only two weeks before our first concert - for which we had to create 75 minutes of composed pieces from scratch. We worked up to 8 hours a day until the first show - at StageWest, a kind of artsy downtown cabaret/theatre in Denver with 250 seat capacity. As it turned out many people were turned away - and though the place couldn't have been fuller, the group still lost about $50. Other concerts followed, including an opener for Sonic Youth. The recording here is from a return engagement at StageWest, shortly after which Eric left to pursue his own projects. Because the group was so tight wound, his departure caused the live performance group to unravel and "Thinking Plague" returned to being a studio group.

A few months later the material for the CD eventually released as "In This Life" was ready, and this band also started to perform, but these performances were more organic and less "wound up" than the old group. Thus this recording (and there are others which will hopefullly one day see the light) captures a unique phase of Thinking Plague - when we used heavy line synthesiser orchestration and strove for a highly 'produced' sound, with our own stage equipment: electric/electronic and acoustic drums with digital effects switched by the drummer, five different synthesisers with digital effects units and numerous foot operated guitar effects boxes with computerised switching for bass effects.

These recordings were made using two microphones, about 40 feet from the stage, and a Sony F-1 digital VHS system.

Discography:
A Thinking Plague
Moonsongs
In This Life (CD - plus extra songs from the previous two LPs).
The group is currently working on a new CD, with new players Dave Kerman (5 UU's and U Totem), drums, and Sanjay Cumar (also 5 UU's and Totem), keyboards.

A mixed group consisting of members of Thinking Plague and 5 UU's plan a small European tour in late 1994, and will perform Plague, 5 UU's and some Bob Drake new pieces: this will be a unique event. Promoters please contact the address below or Retours c/o ReR.

Contact: Thinking Plague/Mike Johnson, 2209 S.Emerson St., Denver, Colorado 80210, USA.

Les Salles Combles
Les Cons Ont Danse: Lait Condense (3.34)
Composed by Yves Chichillos Hausermann.
Recorded and mixed at Le Studio des Usines in Serrieres, Neuchatel, Switzerland by Momo Rossel.
Anne Lele: Bass, voice
Dodo: Keyboads, Voice
Chichillos: Guitar, Voice
Gilles V Rieder: Drums, Voice
Discography:
Due very shortly a CD "Les Combles en Fonte" on Trans Mekanik.
Contact: C. Addor, Ecluse 12, CH.2000 Neuchatel, Switzerland.

Chris Cutler & Fred Frith
Encore! (1.12)
Live recording from the "Electo-Akustisk Koncert", Nordlyd Music Festival, Trondheim, 16 October 1991. Recordd direct to DAT by Bjoern Jaeger Sjoeholt. Composed by Cutler/Frith and a roomful of very serious Norwegians. Thanks to Trond Einar Garmo, Kjell Oversand and Arne Nordheim.

ZGAMONIUMS ▶
A short exposition of ZGA's instruments
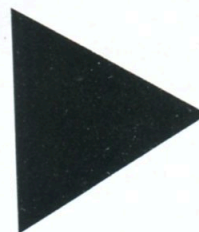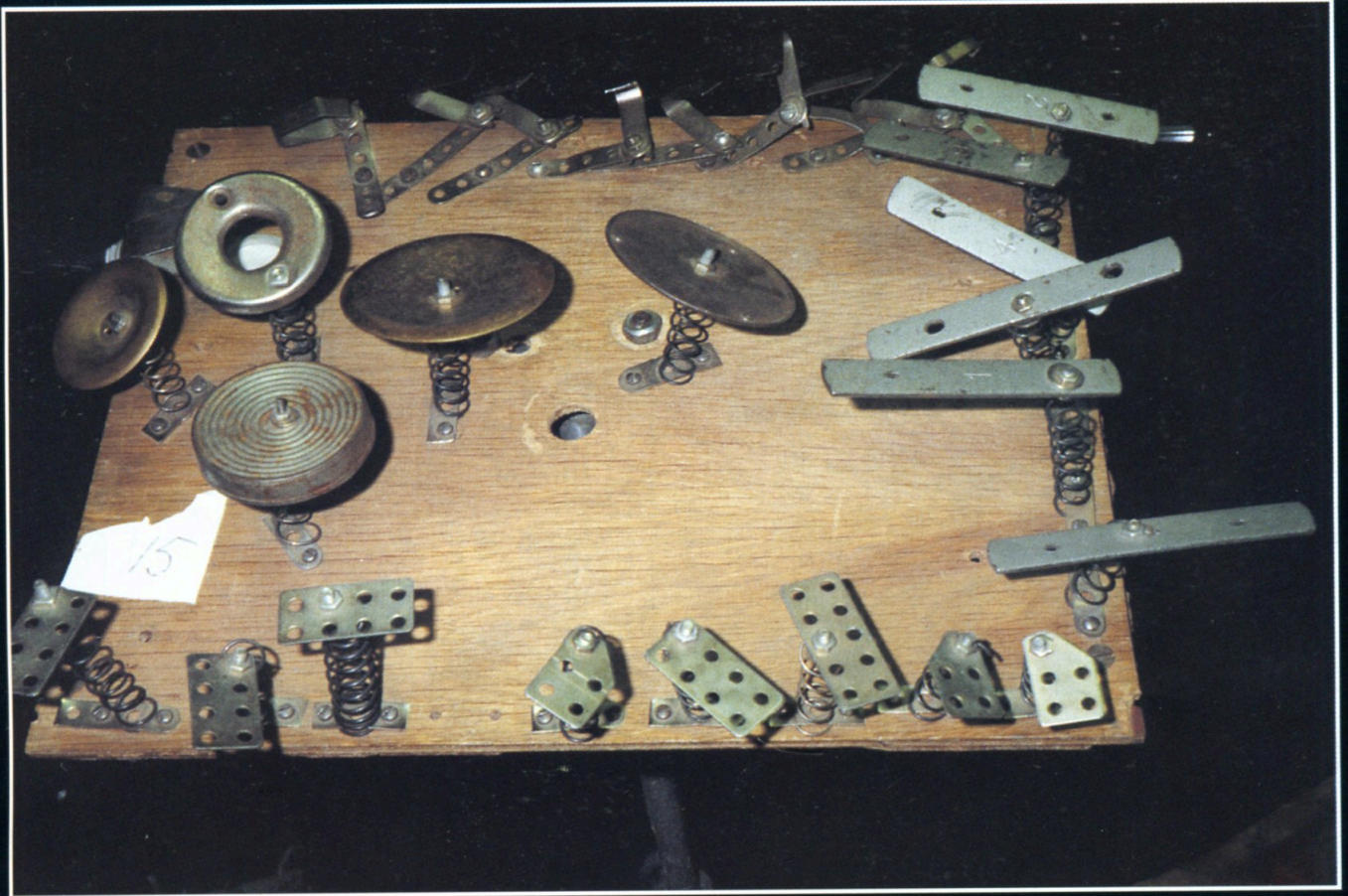
Overleaf are two kinds of Frame Zgamoniums.

The timbre spectra obtainable depend not only on the springs used, but also on the specifications of the metal plates and the amplifying system of piezo-electric contact microphones employed.

To achieve given results the combination of springs is arrived at empirically (by experiment). The sound character of these instruments also derives from the playing methods: ZGA mainly use wooden or plastic sticks, pieces of rubber, fingers and bows.
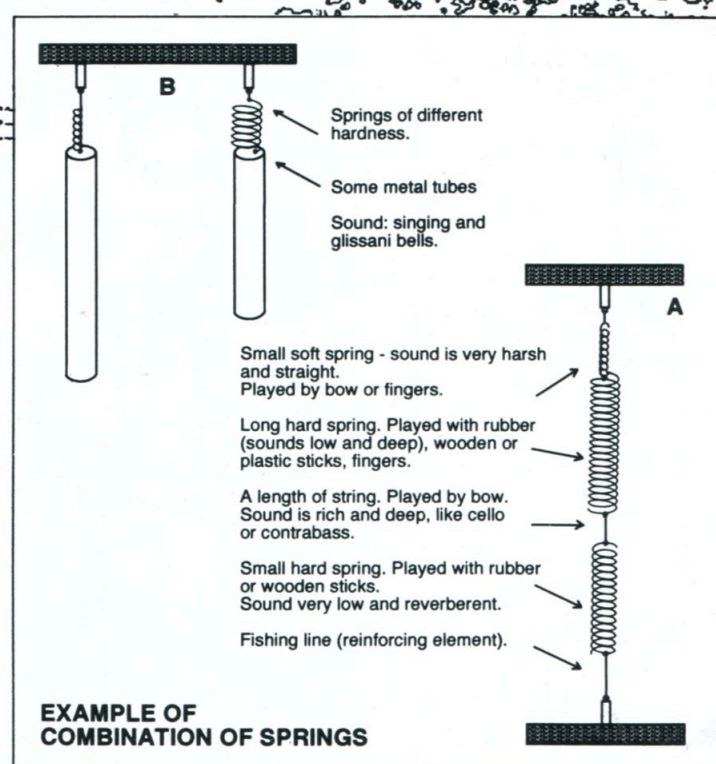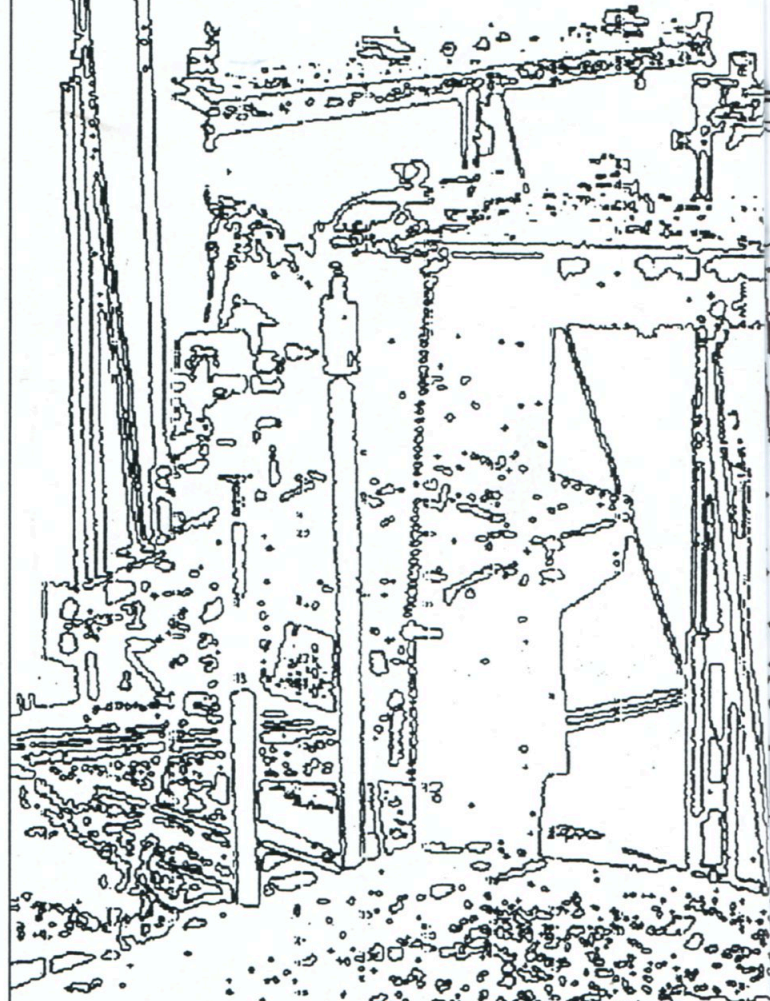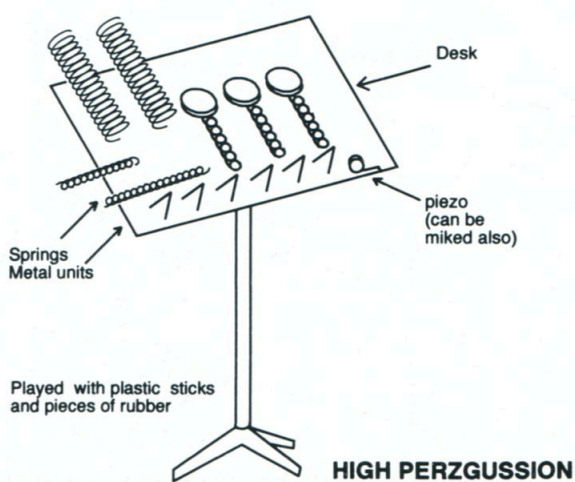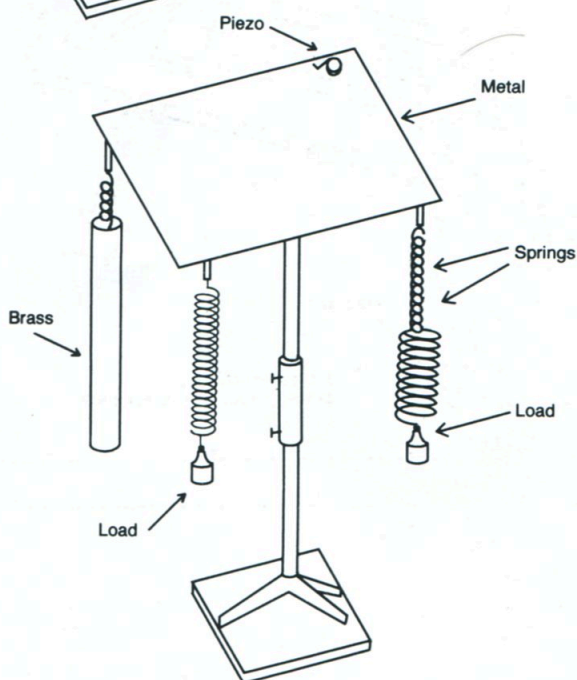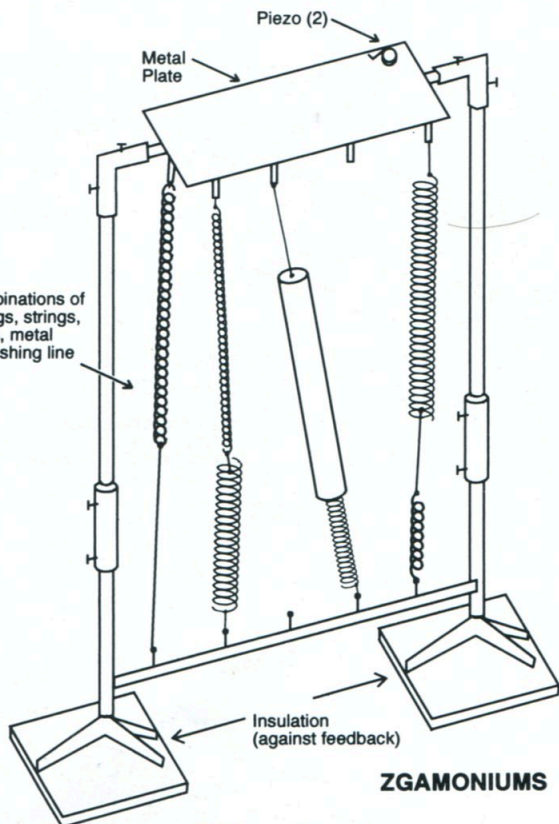
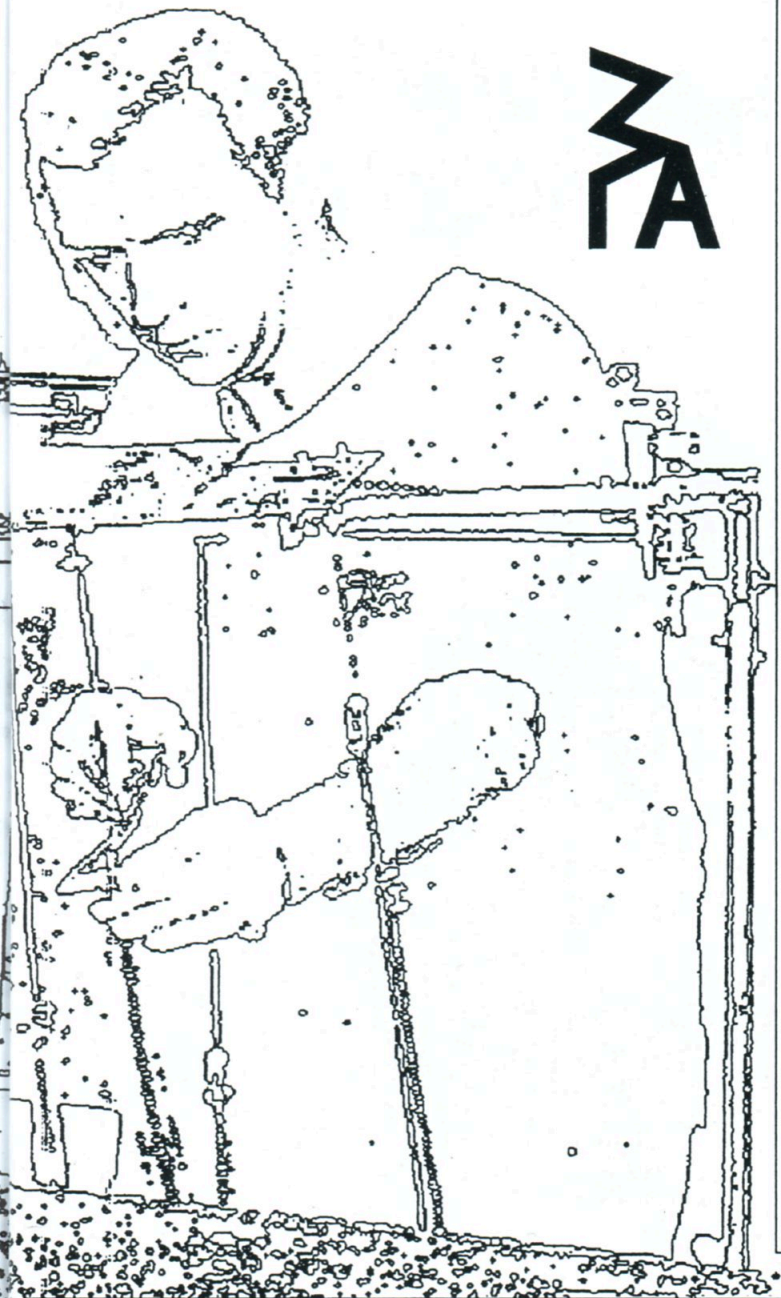Here also are examples of other Zgamonia: Cello and Bass (5 and 6), Zgdrums and Perzgassion (7 - 10).
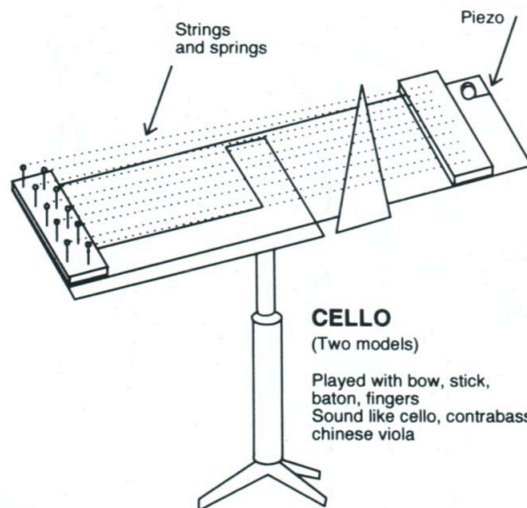
Other instruments used are toy reeds, whistles, combs, &c.
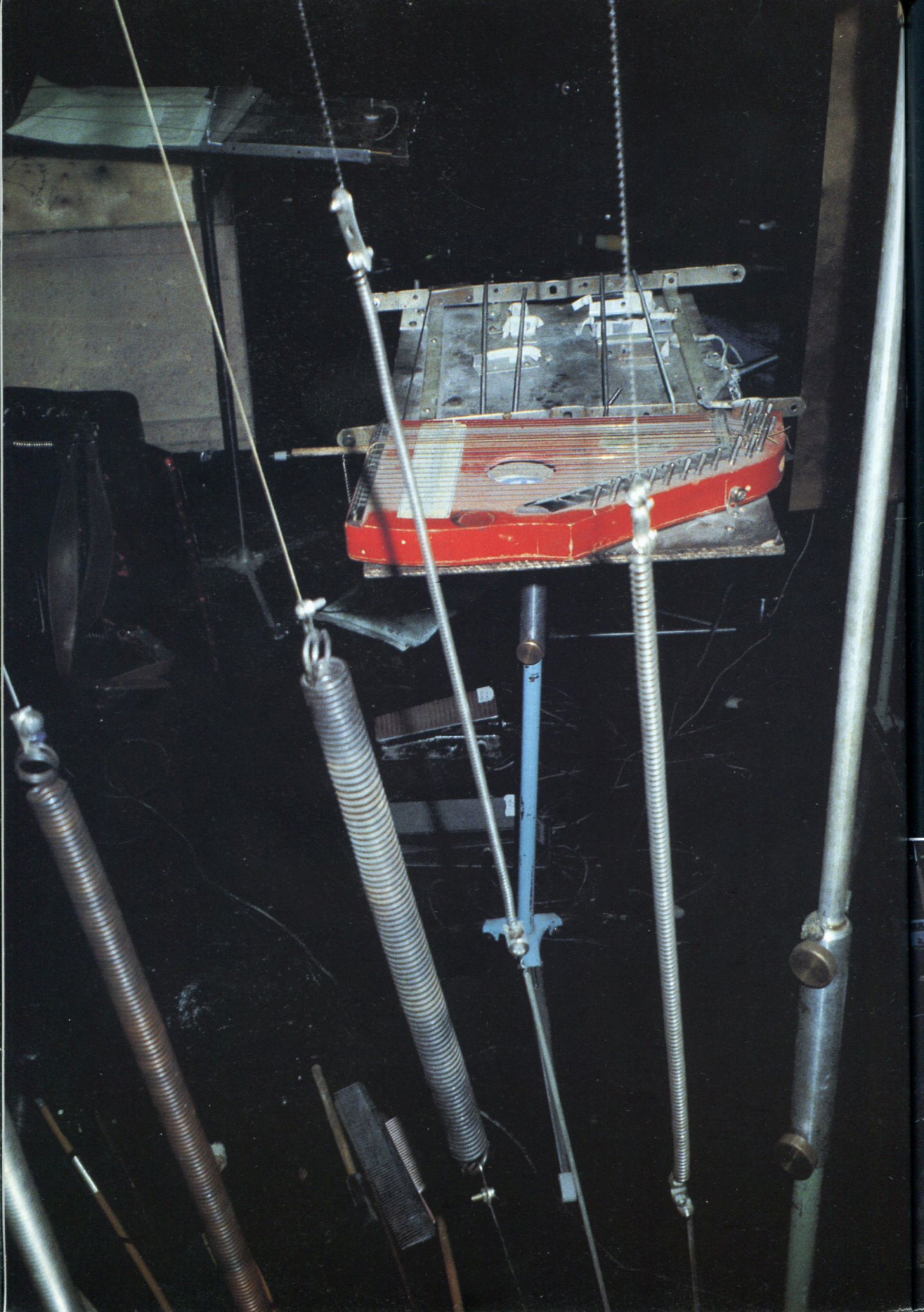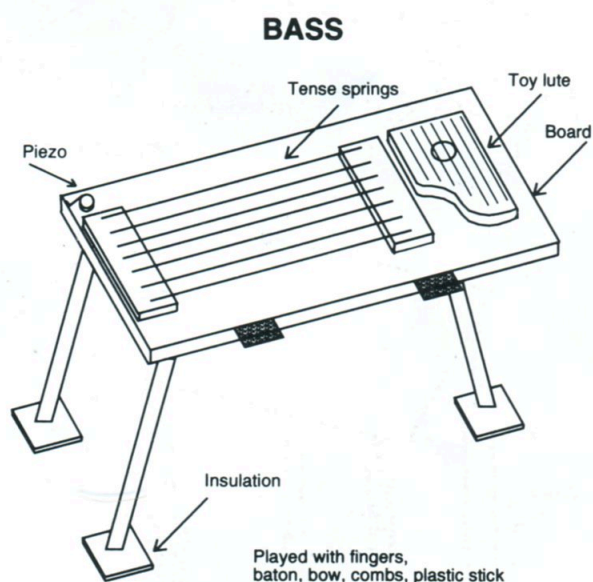
ZGAMONIUMS SOME EXAMPLES

Piezo (2)

Metal Plate

Combinations of springs, strings, tubes, metal and fishing line

Insulation (against feedback)

ZGAMONIUMS

Piezo

Metal

Springs

Brass

Load

Load

Desk

Springs Metal units

piezo (can be miked also)

Played with plastic sticks and pieces of rubber

HIGH PERZGUSSION

B

Springs of different hardness.

Some metal tubes

Sound: singing and glissani bells.

A

Small soft spring - sound is very harsh and straight.
Played by bow or fingers.

Long hard spring. Played with rubber (sounds low and deep), wooden or plastic sticks, fingers.

A length of string. Played by bow. Sound is rich and deep, like cello or contrabass.

Small hard spring. Played with rubber or wooden sticks.
Sound very low and reverberent.

Fishing line (reinforcing element).

EXAMPLE OF COMBINATION OF SPRINGS

Dirk Vallons

CELLO
(Two models)

Strings and springs

Piezo

Played with bow, stick, baton, fingers
Sound like cello, contrabass, chinese viola

BASS

Tense springs

Toy lute

Board

Piezo

Insulation

Played with fingers, baton, bow, combs, plastic stick

ZGDRUMS

Piezo

Ferro

Springs

Brass plate

Combinations of Brass and Iron Plates

Metal Plate

Piezo

BASS DRUM

Carton

Adaptor

Pedal
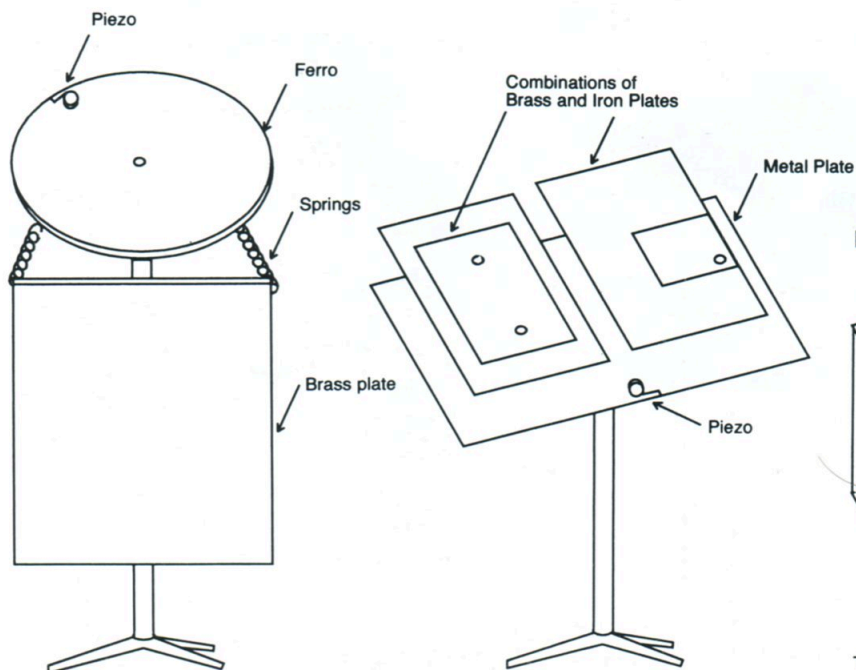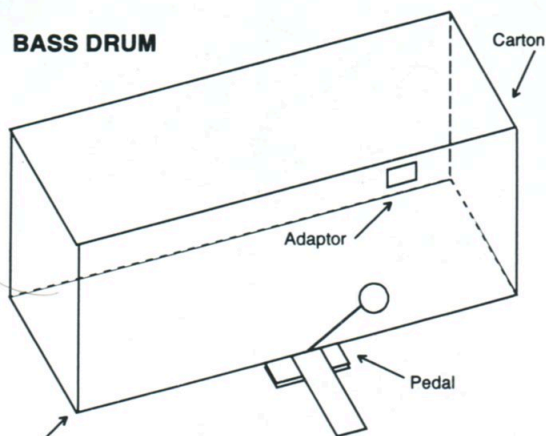
The box + 50 x 80 x 30 is used to transport the other instruments

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REPROGRAPHY AND COPYRIGHT LAW

THE AGE OF INFORMATION

An Interdisciplinary Survey of Cybernetics

The Study of Time

Edited by
J. T. Fraser
F. C. Haber
G. H. Müller

Ross Mart

ЯƏR